



FRIDAY, JANUARY 7, 1881.

Apprenticeship in Prussian State Railroad Shops.

[Translated for the Railroad Gazette from the Journal of the German Railroad Union.]

For a considerable time the management of the workshops of the Berg & Märk Railroad have devoted much attention to training apprentices and fitting them to become valuable assistants in their car and locomotive repair shops. They have been urged to adopt this course by their experience that workmen educated in small concerns do not answer, either as regards number or capacity, the requirements of such a large establishment as a railroad repair shop. This is only partly accounted for by the fact that the small shops afford no opportunities for the acquisition of the special technical knowledge requisite for the successful production of railroad rolling stock and its respective parts, but must be to a much larger extent attributed to the retrograde movement that has taken place in the skill of the artisan since the abandonment of compulsory probation, and to the small amount of importance that is attached to the possession of a certificate of ability. As, therefore, of late the necessity for thoroughly trained artisan apprentices became more and more widely recognized, it became at the same time apparent that it would be desirable, and in accordance with the spirit of the age, to unite in one general exhibition a large number of specimens of work produced voluntarily by the apprentices in the workshops of the Berg & Märk Railroad.

It was hoped thereby, not only to stimulate the apprentices to greater exercise of their abilities and infuse a spirit of emulation among them, but also to furnish a practical solution of the much-vexed question as to whether the industrial element in the country could be improved by means of the training of skilled mechanics in these large establishments, and if so to what extent such improvement is possible.

The exhibition took place during the period from the 11th to the 26th of September, 1880, and the specimens of handiwork were furnished by 328 apprentices, among whom were 222 machinists, 48 turners, 2 coppersmiths, 15 varnishers, 1 brass founder, 4 smiths, 19 joiners, 5 tinsmiths, 10 saddlers, and 2 boiler-makers; only such apprentices were allowed to compete as had been in the workshops over six months on the first of last July. The specimens were constructed under the superintendence of a foreman, but without assistance from any one. Only such work was accepted for exhibition as was of some practical value; all purely show pieces were vigorously excluded. Where different workmen had been employed in the production of any one piece of work, for instance, a smith and turner on a machinist's exhibit, but at the same time the work was only exhibited on the merits of one man's work, the facts were stated. The age of the apprentice, the length of time he had served, and the name of his foreman were also attached to the exhibit. Such specimens of workmanship as showed that the exhibitor was likely to develop more than ordinary skill in his particular department were, with the sanction of the Minister of Public Works, rewarded with money prizes apportioned as follows: two prizes of 50 marks (\$12.50); five of 20 marks (\$5); and twenty of 10 marks (\$2.50). The committee appointed to award the prizes included two master mechanics, three shop managers, eleven work-masters and one foreman, appointed by the railroad management, together with nine workmen selected by the different shops, whose opinion should only be called for in case of a lack of harmony among the master mechanics. The distribution of the prizes took place at the close of the exhibition and was attended by appropriate ceremonies.

The conditions upon which apprentices are received in the workshops of the Berg & Märk Railroad management, and which are embodied in the indenture of apprenticeship that must be signed, are identical in substance with the rules promulgated by the Minister of Public Works for the guidance of the royal railroad direction districts of Hanover, Frankfurt-on-the-Main, Berlin, Breslau and Bromberg in similar cases. The remuneration which the apprentices receive is fixed for the first half-year at 60 pfennigs (15 cents), per diem, to increase half yearly during the first two years to 1 mark, 20 pfennigs (29 cents), and during the two last years of his apprenticeship to further increase half-yearly to 1.60 marks (40 cents), per diem. It is also arranged that after completing his probationary work, every apprentice, on being made journeyman, shall receive a present of some article that will be useful to him in his vocation, for instance a technical book, a traveling outfit, etc., to encourage him to continue his studies independently, and occupy his leisure hours profitably.

Of the whole 412 apprentices (3 smiths, 290 locksmiths, 21 joiners, 10 saddlers, 19 varnishers, 8 tinsmiths, 54 turners, etc.), amounting in all to about 12 per cent. of the total force of workmen, 372 are in the large central workshops—250 in Witten, 33 in Crefeld, 20 in Elberfeld, 22 in Laugenberg, 38 in Arnsberg, and 9 in Siegen—for the reason that these shops, in consequence of their complete equipment and the presence of the necessary instructors, are particularly adapted to receive apprentices. In the auxiliary workshops will be found chiefly the sons of such regular employes as are engaged on the spot or in the vicinity, they having both

here and elsewhere the preference over other candidates in the selection of apprentices.

After the lapse of the first two years of apprenticeship the apprentices are put at contract work, in order that during their four years' stay they may be taught to understand and accomplish every branch of work undertaken in a railroad workshop. Only in a few isolated cases, in which the apprentices were themselves the cause, has it been found necessary to prolong the period of practical instruction beyond this time.

During the latest period, from April, 1879, to May, 1880, 61 apprentices have undergone the examination for journeyman, and, with one exception, all have passed; 51 remained in the employ of the railroad direction.

A large number of the higher class of skilled artisans in the repair shops of the Berg & Märk Railroad, particularly in the Witten shops, are apprentices who have been trained in the shops during the last twenty years. In this personnel the railroad possesses a staff of capable workmen, accustomed to careful work, and by reason of their training thoroughly acquainted with every detail in the construction of rolling stock, and who, in both capability and usefulness, as well as in general conduct, are in no respects behind their fellow workmen who have received different training. From among this force, which they have themselves trained, the railroad authorities have appointed many to the position of locomotive inspectors, and several have made application to undergo the examination prescribed by the Railroad Bureau of the Public Works Department for all candidates who wish to qualify for the position of master-mechanic in the state railroad department. The applications for admission as apprentice in the Witten shops have been so numerous that many of the applicants had to be refused.

The general conditions governing the reception and training of artisan apprentices in the workshops of the Berg & Märk Railroad are as follows:

In the workshops of the Berg & Märk Railroad apprentices are accepted for the purpose of learning a trade, under the following conditions:

1. The apprentice must be above 14 years of age and not over 16; only in exceptional cases may apprentices be received up to their eighteenth year. The apprentice must have been confirmed [in his church, whether Catholic or Lutheran], must have passed the elementary school, and be thoroughly healthy and capable of performing the necessary work.

2. On presentation of the foregoing certificates the railroad authorities shall sign, with the father or guardian of the applicant, indentures of apprenticeship for the period of four years.

3. Should the applicant have already been an apprentice, he shall only be accepted in consideration of the previous agreement having been properly and legally canceled. In such a case the period of four years may be to a certain extent reduced.

4. In addition to practical studies the apprentice shall be bound to attend, for instruction, such schools of advancement as may be prescribed by the shop authorities.

5. On the execution of the indentures, and before the apprentice is installed in the shops, he shall be provided with a "work-book," according to the police regulations. [A sort of "descriptive roll," in which is recorded a general history of his service, wherever he works and as long as he lives, and which he has to produce when asking employment.]

6. While serving his time, the apprentice shall be subject to the paternal discipline of the directors of the workshop, and is bound to yield implicit obedience to his teachers and superiors. For flagrant breaches of discipline, for carelessness, irregularity of attendance, etc., the apprentice may be punished by fine; unauthorized absence from school shall particularly be punished by loss of the day's pay or a portion thereof.

7. The daily time of work in the shops for apprentices shall be ten hours. Sunday or night work will, as a rule, be avoided.

8. The apprentice shall pursue an orderly, decent course of life, and shall, in all cases, strive to deserve the love and respect of his teachers, and preserve good fellowship with his fellow apprentices. The apprentice shall observe strict punctuality in his attendance at the workshop or school, shall perform such work or duty as may be allotted to him willingly and zealously; shall strive to perfect himself in his work as much as possible, and constantly study the interests of the management. Both at work and in school the apprentice shall appear in clean and proper clothing.

9. After the expiration of a probationary period of eight weeks, during which time the agreement may be voided by either side, it becomes binding, and may be dissolved only by mutual consent, except in such cases where, according to Section VII. of the trades' regulations, such relations exist as justify the canceling of the indentures of apprenticeship.

10. In all cases where the indentures are canceled on account of gross misbehavior on the part of the apprentice, particularly when the latter has wilfully absconded from his apprenticeship, he shall not be admitted to employment at any future time in any work-shop of either a Prussian state railroad, or a railroad leased by the government.

11. At the expiration of his apprenticeship, on the satisfactory accomplishment of the proof-task, the apprentice shall be furnished with a certificate, free of cost or stamp duty, after which all responsibility on the part of the railroad direction as to his future employment ceases. But, inasmuch as the apprentice may have been recognized while serving his time as a capable, well-behaved, willing and trustworthy person, he will be preferred by the railroad authorities for employment in their shops, should there be a vacancy to be filled.

It is to be hoped that the exhibition will be another successful link in the chain of efforts which have been lately directed toward the improvement of the capability of artisans, by encouraging the development of a proper system of apprenticeship.

Contributions.

The Basis of Payment for Car-Service.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The matter of foreign car-service is certainly of sufficient importance to entitle it to far greater attention and consideration than it appears to receive at present, judging from the manner in which this branch of the railroad business is now conducted. When the railroad traffic was far less in magnitude, freight cars were principally retained in the local business of the road to which they belonged, and, whenever practicable, all freight was transferred at junctions; but, at present, the requirements of the vastly greater business demand that transfers should be avoided wherever possible, and that greater dispatch and decreased cost of transportation should be caused by sending the car through to the point of destination of the freight it carries. Hence we find on the line of every railroad car belonging to various other roads, many of which are located in an altogether different section of the country. It would be natural to conclude that a matter of such great importance as the interchange of cars must be would be regulated by strict and clearly defined rules, bearing on every point in any way pertaining to the subject; but this does not appear to be the case, for with the exception of the present Master Car-Builders' rule relating to the manner of interchange and the settlement for repairs on foreign cars, as adopted by many of the more important roads, and the establishment of a rate per mile, to be paid for the use of cars belonging to other roads or freight lines, there does not appear to be any well established rule applying in any way to the interchange of cars. Of course, it is generally understood that foreign cars should be handled with the same care and consideration as are the local cars of a road; that they are to be forwarded with dispatch, unloaded promptly, and returned to the road from which they were received with the least possible delay. Still, this is merely unwritten law, tacitly agreed to by all roads, and carried out with greater or less fidelity, according to the character of the management and the exigencies of the business of the road. Agents rarely give as faithful attention to the interests of their principal as that principal would take in anything affecting his own welfare, and, in this case, the manager of a road may be looked upon in the character of an agent for the owners of all foreign cars that may from time to time come within the limits of his jurisdiction. It is safe to assume that in many cases the obligations pertaining to such an agency are made in a great measure subordinate to the interests of his own company, and, while he may have no intention of acting in a dishonorable manner, he does not give the same attention to the quick movement and prompt return of foreign cars that he does to the prompt handling of the cars of the road with which he is connected. He may have given general instructions to his subordinates in reference to treatment of foreign cars, but where these rules have been broken in the interest of his road he is inclined to avoid seeing or knowing anything about it, if possible. Then, if he considers that the strict enforcement of the rules in relation to prompt unloading would be likely to antagonize any large shipper or cause the road to lose any traffic, he is apt to look with more composure and forbearance on any delay in unloading foreign cars than if they were local cars that were needed for their own business. Self interest has been known to cause very elastic consciences in mankind, and it is hardly fair to assume that railroad managers are any nearer perfection than the rest of the human family, and it is just as necessary that they be subject to checks and other precautionary measures to keep them straight as if they were engaged in any other business. In mercantile life the buyer is devising every plan to prevent the seller from getting the advantage of him, and on the other hand the seller is ever on the alert that the buyer does not get the best of him in some way. They do not contend that the other party is always, or even usually, dishonest; but the exception may be, and they have to be on the watch all the while, as they cannot tell just when they may run across the dishonest one. But the railroad managers, in the matter of car interchange at least, show such great confidence in each other that it would indicate that they must have the greatest faith in each other's integrity.

The present system (if it can justly be termed a system) of interchanging cars is open to severe criticism, having very many faults, and it is hereby proposed to call attention to some of the most glaring of its faults. The matter of revenue received being of so great importance, it will be the first matter taking in consideration. There is no way, generally speaking, in which a road is able to tell whether it is receiving fair and honest returns from the other roads in relation to the mileage of its cars, and it has to trust wholly and solely to the honesty of its connections. Further than the knowledge that it has delivered a certain car to an immediate connection at a certain point, and that the car was loaded with freight destined to another certain point, and that upon a subsequent date the car was returned to it, it has no knowledge whatever concerning the mileage that car may have made while off its own road. It can, of course, compute the mileage the car would have made for the round trip between point of delivery and destination of freight it held at time of delivery, but if there was any extra mileage made by the car, it has no means of telling anything about it. Should its immediate connection

deliver the car to another foreign road, it may be diverted on another route on its return trip, and the owner of the car be unable to locate it except by tracer. It is all at sea in relation to the mileage the car may have made, and has no means of calculating it, as the car may be received from a different road and at another junction upon its return home, and may have made a very roundabout journey upon its return trip. It may be claimed that the daily interchange report so warmly advocated by Mr. Davies, and which has been adopted by several important roads, would meet the requirements of the case. If the labor and expense connected with the use of these reports are not too great, they certainly are far superior to the ordinary reports, and their universal adoption would enable a road to locate every car it owned, whether the car was on its own line or on a foreign road; it would show the exact mileage every car made, and also show where a car was detained, and the length of detention. But it is a question whether this system is any better than that on which the New England Car Accountant Association is founded, that is, as far as the accuracy of mileage returns are concerned. The roads connected with this Association, we understand, send daily conductors' reports and junction reports to the Manager of the Association, and an account of the mileage due from and to each road is kept in his office, and returns are made monthly to the various roads in the Association. Both these systems have many good features, and are a great step forward in the right direction, but they hardly meet all the demands of the occasion with that completeness so very desirable and so conducive to economic management.

But before going any further in the matter, it may be proper to inquire whether the basing of the charge for car service upon the principle of a certain rate per mile, and at the same figure, under all circumstances, for the same class of car, is the truest and most equitable way of making the charge. The present rate for eight-wheeled freight cars is three-quarters of one cent per mile. Now, while one car may pass over a road three hundred miles long in two days, remain at destination two days, and then be returned to point of receipt in two more days, thus making the round trip of 600 miles and earning for its owners \$4.50 in six days; another car may be delivered to the same road at the same point and only travel 50 miles and then remain four or five days, and then be returned to the receiving junction, taking for the round trip the same amount of time as the first car did for its round trip, but only earning seventy-five cents for its owners against the four and one-half dollars earned by the first car in the same time. While it is not claimed that the owners of the cars should have received the same returns in both cases, it does look as if their interests should receive some consideration in the matter. Consequently it would be no more than just that a certain mileage should be considered as the minimum for a day's work, and while a road should pay for all excess of mileage over this minimum, a car should be credited with mileage according to this minimum for the time it was on any road when the actual mileage for the same time does not equal the amount of mileage as per this rate. Say, for instance, that the minimum was placed at seventy-five miles per day—not that that figure is especially recommended, but because it will do as well for illustration as any other; then the car that made a mileage of six hundred miles in six days would pay four and one-half dollars, that amount being at the established rate of three-quarters of one cent per mile, and being in excess of the minimum charge for the same time. But the car that only made one hundred miles in six days would have to be credited with three dollars and thirty-seven and one-half cents instead of seventy-five cents, as it would receive under the present arrangement, that amount being the minimum charge for six days' service. This minimum mileage could probably be placed at even a lower figure than seventy-five miles, from the fact if a road had to pay something, even it was an inconsiderable amount, for the lay days, it would be stimulated to greater exertion to give foreign cars prompt dispatch, and the actual car mileage of a given number of cars would be considerably greater than it is now. Then if any unusual detention of a car was caused for the accommodation of freighters, a road could reasonably charge the freighters for all extra expense resulting from the detention; or if the road held the car for its own convenience it is certainly no more than just that the owner of the car should receive some recompense. It may be said that in case of detention through severe storm or accident, it is hardly fair to ask a road to pay for detention which was unavoidable and over which it has no control. Still, accidents and storms are not peculiar to any one road, and while it may be put to extra expense by the adoption of this rule should any accidents occur on its line, it will be likely to receive its money back again when its own cars are detained on some foreign road from similar cause. The main object in adopting a minimum per diem charge for car-service is to secure a greater dispatch in car movement and to locate the cost for detention where it properly belongs. This object can probably be better attained by the above plan than through any other. Should it be found that the adoption of a "minimum" standard bears too heavy on one particular road engaged in a through traffic in which several other roads are jointly interested, there seems to be no reason why the matter could not be adjusted by allowing an equitable rebate to the overtaxed road and pro-rating the same among the other roads. There could be no objection to and not much labor in arranging the matter this way. Then, again, it may be preferable that "lay-days" should be allowed at starting-point and destination, so as to allow a reasonable time for loading and unloading. There would be nothing unreasonable about this, and it may be nearer the fair thing. Only, in this case, it would be

necessary to raise the minimum per diem rate for the time the car was in transit to offset the allowances for "lay-days." If the car was passing over more than two roads with any one shipment, the allowance for "lay-days" would certainly be just; otherwise a discrimination would be made in favor of the intermediate roads. The suggestions hereby offered are undoubtedly crude, and in many respects imperfect. The main object is the advocacy of the proposition that in determining what is the proper charge for car service, time should receive consideration as well as mileage. A change from the present system in the manner suggested would undoubtedly make some roads pay a greater amount for the use of foreign cars than they do now, but it could not help being profitable to the owners of the foreign cars. The position that every road would take on this question would very likely be decided by the fact whether the difference between its receipts and expenditure for account of car service was in favor of or against it at the present time. Still, speaking in a general sense, it cannot be doubted but that almost every road would be benefited by the consideration of time in connection with the charge for car service. If in no other way it would be by the possibility of obtaining a greater amount of service out of the same number of cars than it does at present. It is thought that more satisfactory results can be obtained from the combination and fusing of the two systems than could be obtained by the strict adherence to either the mileage or per diem system alone; that their combination would be more equitable to all parties interested than is the present system of a certain rate per mile, or than a per diem rate would be.

Calculation of Strains in Single Intersection Bridges.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In the following plan the uniformly distributed dead and live loads are considered separately, as by so doing a more accurate and economical result is obtained. It depends upon the fact that the shearing forces for a uniformly distributed dead load, vary directly as their distance from the centre of the span, being at that point 0, and at the points of support $= \frac{wl}{2}$ where w = uniformly distributed dead load per linear foot of one truss, and l = length of span in feet; $\frac{wl}{2}$ always being a known quantity, it is taken as a unit, and all vertical

only the vertical effect in braces, these quantities must be increased in proportion to the inclination of the braces.)

The effect of the maximum shearing forces from the live load on rods is,

$$\text{on } 1 = \frac{81c'}{400}; \text{ on } 2 = \frac{121c'}{400}; \text{ on } 3 = \frac{169c'}{400}; \text{ on } 4 = \frac{225c'}{400}; \\ \text{on } 5 = \frac{289c'}{400}.$$

The effect of maximum shearing forces on braces from live load is,

$$\text{on } e = \frac{9c'}{400}; \text{ on } d = \frac{25c'}{400}; \text{ on } c = \frac{49c'}{400}; \text{ on } b = \frac{81c'}{400}; \\ \text{on } 1 = \frac{121c'}{400}; \text{ on } 2 = \frac{169c'}{400}; \text{ on } 3 = \frac{225c'}{400}; \text{ on } 4 = \frac{289c'}{400}; \text{ on } 5 = \frac{361c'}{400}.$$

Above remark in () will also apply here. Chord strain at

centre $= \frac{(w+w')l^2}{8h}$. Chord strains at other points in length

of span vary as ordinates to a parabola whose middle ordinate is $\frac{(w+w')l^2}{8h}$.

Second Case.—Deck bridge with odd number of panels.

Notation same as for first case.

The effect of maximum shearing forces from dead load on rods is,

$$\text{on } 1 = 0; \text{ on } 2 = \frac{2c}{11}; \text{ on } 3 = \frac{4c}{11}; \text{ on } 4 = \frac{6c}{11}; \text{ on } 5 = \frac{8c}{11}.$$

The effect of maximum shearing forces from dead load on braces is,

$$\text{on } f = \frac{2c}{11}; \text{ on } 2 = \frac{4c}{11}; \text{ on } 3 = \frac{6c}{11}; \text{ on } 4 = \frac{8c}{11}; \text{ on } 5 = \frac{10c}{11}.$$

Remark in () will apply here.

The effect of maximum shearing forces from live load on rods is,

$$\text{on } 1 = \frac{121c'}{484}; \text{ on } 2 = \frac{169c'}{484}; \text{ on } 3 = \frac{225c'}{484}; \text{ on } 4 = \frac{289c'}{484}; \\ \text{on } 5 = \frac{361c'}{484}.$$

The effect of maximum shearing forces from live load on braces is,

$$\text{on } f = \frac{c'}{484}; \text{ on } e = \frac{9c'}{484}; \text{ on } d = \frac{25c'}{484}; \text{ on } c = \frac{49c'}{484}; \text{ on } b = \frac{81c'}{484};$$

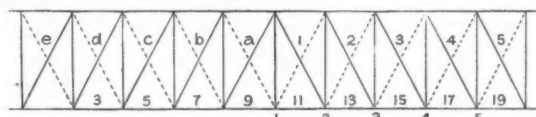


Fig. 1.

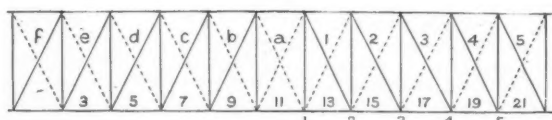


Fig. 2.

forces produced by dead load are obtained as fractions of it.

This plan further depends upon the fact that the maximum shearing forces for a uniform live load, advancing from either support, vary as the squares of their distance from the opposite point of support, or as the ordinates measured between a parabola and its tangent, a horizontal line of the length of the span representing the tangent, the point of tangency and vertex of parabola being at one of the points of support. The greatest shearing force is produced at the points of support, and is $\frac{wl}{2}$ where w = weight of rolling load per linear foot of one truss, and l = length of span as before; $\frac{wl}{2}$ always being a known quantity is taken as a unit, and all vertical forces produced by rolling load are obtained as fractions of it.

The sum of the shearing forces as obtained above will be the maximum shearing forces for all positions of the load.

Following are illustrations of all the cases (four) that can occur with uniform panels:

First case.—Deck bridge, even number of panels, span between end panel points = l .

Uniformly distributed dead load per linear foot of one truss = w .

Uniformly distributed live load per linear foot of one truss = w' .

Depth of truss on centres of chords = h .

Maximum shearing force for dead load at points of support $= \frac{wl}{2} = c$.

Maximum shearing force for live load at points of support $= \frac{w'l}{2} = c'$.

In above case the effect of the maximum shearing force from dead load on rods is, on 1 = 0; on 2 = $\frac{c}{10}$; on 3 = $\frac{3c}{10}$; on 4 = $\frac{5c}{10}$; on 5 = $\frac{7c}{10}$. The effect of the maximum shearing forces from dead load on braces is, on 1 = 0; on 2 = $\frac{3c}{10}$; on 3 = $\frac{5c}{10}$; on 4 = $\frac{7c}{10}$; on 5 = $\frac{9c}{10}$ (It is, of course, understood that the above fractions give

* The unit used in this case is the half panel. The fractions of $\frac{wl}{2}$, that give shearing forces, have a constant denominator which is the square of twice the total number of panels. The numerator is the square of twice the number of panels between the point of support and the point where the shearing force is taken.

$$\text{on } a = \frac{121c'}{484}; \text{ on } 1 = \frac{169c'}{484}; \text{ on } 2 = \frac{225c'}{484}; \text{ on } 3 = \frac{289c'}{484}; \\ \text{on } 4 = \frac{361c'}{484}; \text{ on } 5 = \frac{441c'}{484}.$$

Remark in () will apply here.

Third case.—Through bridge with an even number of panels. The effect on both rods and braces is the same as for the braces in the case of a deck bridge with an even number of panels.

Fourth case.—Through bridge with an odd number of panels. The effect on both rods and braces is the same as for the braces in the case of a deck bridge with an odd number of panels.

The principle of finding the chord strain is the same for each case.

When it becomes necessary to provide for engine excess, it is distributed on the principle of the lever and added to the results obtained as above.

THE SCRAP HEAP.

The Flagman's Ghost Story.

The stove committee were engaged in an animated discussion of the ghost question, when the door opened and the genial face of Hank Woodruff appeared, followed by the body of the same individual, and then ensued the usual stamping of feet, shaking of hat and clothing, for it was snowing outside in a way that promised hard work for the morrow in shoveling and forcing a way through the drifts that are always to be found in the cuts after a snow storm on all well-regulated railways.

"Do I believe in ghosts?" said Hank; "well, not much; at least, I haven't of late years, but in my younger days I was as big a fool 'bout seeing sights as any of you youngsters. But," continued Hank, "did I ever tell you 'bout that time me and Sile Burrows set up with the corpse down to Mrs. Wood's boarding house? No? Well, you see, his name was Smith; some of them Smiths that live down in Sussex County, near Lafayette; a first-rate feller and a good flagman, as most of them farmers' boys make, if they live through the early stages of hand-smashing and leg-breaking necessary to break in a good man; but what in thunder he wanted to leave a good farm for and come up here to get run over and mashed all up, I never could see. He was killed down in the yard at Middletown; a coal train backing in there out of the way of the milk caught him as he was stepping out after making a coupling, and he only lived about an hour."

"Well, he was brought to Port, and, after being fixed up real nice, black walnut coffin and all that, he was taken to his boarding house, from which place his friends were to get him in the morning and take him down home, where the funeral was to be held. Mrs. Wood asked me and Sile to sit up with the corpse that night, and of course we couldn't refuse; but what use there is in the heathenish custom I never

could see; the corpse can't run away, and I doubt very much if any body would steal it, at least not around a railroad town like this, where the doctors can get all the practice they want on live subjects without having to practice on a stiff.

"Well, Sile went out and got a half gallon of applejack, for you know him and me could never sit up all night without a little of the ah-o-be-joyful, and about ten o'clock we went up in the room where poor Smith lay, and began our sittin' up. We talked over all the ghost stories we had ever heard to keep our spirits up, and kept pouring the spirits down until about two o'clock in the morning, when by that time Sile couldn't have told a ghost from a barn, and so laid down on a bed in the room, and in less than 10 minutes was snoring so loud you'd a thought the pop-valve on one of the big mogul engines had gone off at 140 pounds.

"Well, I took another pull at the demijohn, settled myself in the old rocking-chair, put my feet upon the coffin that sat on some chairs, and got to musing like, 'Smith,' thought I, 'you was a good feller and a fair kind of a flagman; you always was ready to slap on the caboose brake going down a grade, and always helped the boys ease her up to a water-tank; you was always ready with a flag when we broke in two around the Otterkill or in going down the valley, and always done the very best you knowed how, wherever you was put, and I can't see no reason why, when you was called in and passed over the river, you shouldn't be among the best, even if you was a railroadier.'

"Sitting and thinking this way, I found myself nodding and napping, and 'roused up, took a good snifter of the red-eye, and fell to thinking and napping again: took two or three more pulls at the demijohn, so as to be sure I was awake, when all at once I noticed the lamp sitting on the table begin to burn blue: it burned bluer and bluer, and finally went out. I was just about to get up and strike a match, when I felt that something was in the room, and turning my head a little saw two things come in at the door, both dressed in green, with great white eyes that shone like headlights; and, worst of all, both had tails! Yes, sir, forked tails! They crept rather than walked up to poor Smith, and were about to grab him, when I jumped up, yelled at the top of my voice, and at the same time felt a blow between my eyes that sent me reeling into the corner, and—I fainted clean away.

"How long I lay there unconscious I couldn't say, but when I woke I was lying in the old rocking chair in one corner of the room, Sile was still snoring upon the bed, the sun was shining in at the window, and Smith's corpse was gone! 'Good Lord!' thought I, 'them things with tails have carried him off sure,' and getting up all in a tremble, I pulled and hauled Sile around until I got him woke up, and told him the whole story, when he was as scared as I had been, and we both hurried down stairs with white faces, I tell you. We found Mrs. Wood in the kitchen, to whom we told the story, when, if ever you heard anyone laugh, she did.

"Well, you can bet we looked sheepish enough when she told us that the undertaker and his man had come about daylight and took the corpse off so as to get an early start, as they had over 20 miles to drive to his father's house, where the funeral was to be held, and as we was both asleep they didn't wake us; but, boys, I didn't drink any more whisky for a year or more, and my opinion is, there's more ghosts in the pesky stuff than anywhere else."—*Port Jervis Gazette.*

A Locomotive Station.

Since the recent publication of a method proposed by Mr. Prosper Hanrez, a French engineer, to attach cars to passenger trains while running at speed, our attention has been called to the invention of Mr. A. B. Chapin, of Buffalo, N. Y., on which he received a patent, No. 225,272, March 9, of this year, which would seem to antedate the above. Mr. Hanrez's device embodies the same principle, though differing in detail.

Mr. Chapin's plan for enabling passenger trains to transact their local business, that is to let on and take off passenger without stopping at way stations, is accomplished in the following manner: Cars are placed on side tracks or switches, one at each station, in which passengers desirous of taking any train shall seat themselves previous to its arrival. On making up a train for a journey over a road, a supplementary car, one of the kind used for the side tracks, heretofore mentioned, is attached to the rear. Before arriving at the first station this car is attached, the main train continuing its speed and picking up the car on the side track laden with passengers and baggage, by means of devices hereafter described.

The car which has been cut off, by means of its momentum, entering the station, is guided on to the switch, where it remains until picked up by another passing train. Thus the train passes over the road dropping a car and picking one up at each station, thereby not increasing the size of the train. The manner of attaching these cars is by means of a cable coiled round a drum underneath the rear platform of the main train. Before entering a station, and after the supplementary car, which is to be detached, is cut off, one end of the cable is drawn out to one side of the train in such a manner as to be caught by a hooked arm which projects outward from a stationary car on the side track.

The cable being thus caught and held, causes the drum to revolve and the cable to pay out. The car after being thus connected to the train remains stationary, and does not move until the motion of the drum is checked by the application of brakes which go on at once automatically. If the drum could be stopped at once, the whole velocity of the train would be applied to the car. If checked gradually, only a portion of the velocity is transmitted, and the car is started gradually. The duration of time before the car acquires the velocity of the train is proportionate to the time used in checking the drum. An indicator on the train records the rapidity of the movement of the car, and enables the operator to govern the brakes as the case may demand. The car having acquired the train's motion, and being some distance behind, is brought up by winding in the cable.

Mr. Chapin has looked well to the details, and claims that baggage and express matter can be handled without increased labor, and that only eight or ten additional hands will be required on the whole length of road.—*Buffalo Express.*

Spots.

A conductor on the Kansas City, St. Joseph & Council Bluffs Railroad, who is remarkable for his sterling honesty, saw a spotter on his train. He knew him on sight as an employee of the company, but felt a little indignant at being suspected; so he watched that man till he saw him asleep, and then went and waked him up, roughly shaking him and yelling in a voice loud enough to attract the attention of the whole car: "Wa-wake up, here; y-you are paid for watching me, and I want you to do y-your duty, or I'll report you!" The detective felt very uncomfortable at being shown up this way, and was, moreover, tired and sleepy; but he couldn't complain, and whenever he fell asleep all that night, he was waked up by shouts of "Wake up, here; do your duty, or I'll report you!" He got no rest, and was very glad when he finished the trip with that honest conductor.

RAILROAD EARNINGS IN NOVEMBER.

NAME OF ROAD.	MILEAGE.					EARNINGS.					EARNINGS PER MILE.				
	1880.	1879.	Inc.	Dec.	P. c.	1880.	1879.	Increase.	Decrease.	P. c.	1880.	1879.	Inc.	Dec.	P. c.
Alabama (Gt. Southern).....	290	290				\$ 61,155	\$ 49,600	\$ 11,555			\$ 211	\$ 171			
Atchison, Top. & S. F.....	1,544	985	549		55.2	939,185	603,512	275,673			41.5	608			
At. Miss. & Ohio.....	428	428				209,046	179,972	29,074			16.3	428			
Burlington, Ced. Rapids & North.	492	434	58		13.4	189,330	147,785	41,545			28.1	385			
Cairo & St. Louis.....	146	146				39,042	22,647	16,395			75.2	271			
Central Pacific.....	2,380	2,335	45		10.5	2,154,000	1,488,141	665,859			44.8	835			
Chesapeake & Ohio.....	840	840				239,073	148,073	91,000			61.5	550			
Chicago & Alton.....	220	150	70		46.7	980,952	601,101	379,851			13.3	811			
Chicago & Eastern Illinois.....	3,000	2,182	818		38.4	1,285,597	88,477	40,120			45.3	585			
Chicago, Milwaukee & St. Paul.	2,575	2,200	375		16.9	1,472,000	1,100,244	371,756			33.8	409			
Chicago & Northwestern.....	2,575	2,200	375		16.9	1,820,600	1,558,476	262,124			16.8	711			
Chicago, St. Paul, Minn. & Om.	294	290	4		1.4	176,555	142,737	33,818			23.6	301			
East Div.....	509	389	120		30.8	159,289	109,020	49,269			37.1	297			
Chicago, St. Paul, Minn. & Om.	345	345				232,875	205,601	27,274			13.3	675			
Cin. Ham. & Dayton.....	300	225	75		33.3	198,105	162,082	36,023			22.2	680			
Cin. Ind. St. L. & Chi.....	81	81				101,547	82,951	18,596			22.4	1,253			
Cin. & Springfield.....	391	391				492,123	396,274	95,849			15.3	1,080			
Cleve. Col. Cin. & Ind.....	144	157	13		8.3	31,053	33,700	2,647			7.7	221			
Cleveland, Mt. Vernon & Del.	551	337	214		63.5	408,502	130,285	278,217			214.1	741			
Denver & Rio Grande.....	170	116	54		46.6	87,333	130,077	42,744			37.2	514			
Des Moines & Ft. Dodge.....	224	208	16		7.7	105,061	92,835	12,226			13.2	473			
Flint & Pere Marquette.....	299	290	9		3.0	153,959	113,898	40,061			35.1	515			
Gal. Har. & San Antonio.....	215	215				143,095	135,716	7,379			5.4	606			
Georgia.....	307	307				109,957	123,339	30,618			27.5	553			
Hannibal & St. Joseph.....	292	292				204,116	193,125	10,991			5.8	689			
Houston & Tex. Central.....	533	505	28		5.3	431,965	425,803	6,162			0.5	781			
Illinois Central, Illinois lines.....	914	854	60		7.0	277,131	499,530	222,399			13.6	610			
Iowa.....	402	402				140,813	140,813	0			16.1	407			
Ind. Bloom. & West.....	212	212				96,622	92,279	4,343			4.7	456			
International & Great Northern	557	526	31		5.9	256,756	244,813	11,943			4.9	461			
Lake Erie & Western.....	362	308	54		17.5	99,929	67,869	32,060			47.1	276			
Louisville & Nashville.....	1,837	1,107	730		66.3	929,400	689,519	239,881			34.8	506			
Mar. Houghton & Ontonagon.....	86	86				34,202	29,183	5,019			17.3	398			
Memphis & Charleston.....	292	292				139,225	131,250	7,975			6.1	477			
Memphis, Pad. & No.....	115	115				22,917	19,615	3,302			15.0	199			
Minn. & St. Louis.....	210	210				371,079	387,087	16,008			4.1	472			
Missouri, Kansas & Texas.....	786	786				252,229	300,296	48,067			18.5	498			
Mobile & Ohio.....	506	506				182,087	174,245	7,842			4.5	401			
Nash. Chatta. & St. Louis.....	1,013	1,013				3,047,541	2,801,835	245,706			8.8	3,008			
N. Y. Central & Hudson River.....	316	316				207,241	173,712	33,529			19.3	656			
N. Y. & New England.....	326	326				450,053	377,316	72,737			21.5	1,408			
Northern Central.....	750	644	106		16.5	277,755	210,635	67,120			32.3	370			
Northern Pacific.....	37	37				37,557	41,796	4,239			10.1	203			
Paducah & Elizabethtown.....	188	185	3		1.6	3,574,913	3,131,097	443,816			14.1	1,897			
Pennsylvania.....	1,884	1,872	12		0.6	36,642	9,683	26,959			278.0	191			
Peoria, Dec. & Evansville.....	192	78	114		146.2	109,693	100,963	8,730			8.6	502			
St. L. Alt. & T. H. Main Line.....	71	71				38,070	32,460	5,610			29.7	959			
St. L. Alt. & T. H., Bellevue L'E.....	685	685				626,725	656,832	30,107			4.6	915			
St. Louis, Iron Mt. & Southern.....	627	496	131		29.0	284,007	199,805	84,202			43.2	453			
St. Louis & San Francisco.....	680	600	80		13.3	300,675	236,095	64,580			34.6	442			
St. Paul, Minn. & Manitoba.....	100	100				28,751	29,251	500			9.5	298			
Scioto Valley.....	176	161	15		8.3	96,000	66,886	29,114			43.5	546			
Union Pacific.....	3,080	2,776	304		11.0	2,265,160	1,796,343	468,817			26.1	729			
Washington, St. L. & Pacific.....	2,487	2,168	319		14.9	1,105,615	864,057	241,558			28.0	444			
Wisconsin Central.....	454	454				113,070	82,079	30,991			37.7	249			
Total, 57 roads.....	37,963	32,705	5,258		16.1	26,828,495	22,191,167	4,637,328			20.9	709			
Total increase.....			5,258					4,637,328							

RAILROAD EARNINGS, ELEVEN MONTHS ENDING NOVEMBER 30.

NAME OF ROAD.	MILEAGE.					EARNINGS.					EARNINGS PER MILE.					
	1880.	1879.	Inc.	Dec.	P. c.	1880.	1879.	Increase.	Decrease.	P. c.	1880.	1879.	Inc.	Dec.	P. c.	
Ala. Gt. Southern	290	290				\$ 382,252	\$ 390,644	\$ 191,608			\$ 49.1	\$ 2,008	\$ 1,347	\$ 661	\$ 49.1	
Atch. Top. & S. F.	1,319	940	379		40.3	7,693,185	5,761,959	1,931,226			33.5	5,833	6,130	297	4.9	
At. Miss. & Ohio	428	428				1,882,448	1,545,287	336,161			21.1	4,398	5,013		21.1	
Bur. Ced. Rap. & No.	492	434	58		13.4	1,860,062	1,358,744	501,318			37.3	3,781	3,131	650	21.0	
Cairo & St. Louis	146	146				375,213	228,795	136,418			57.1	2,570	1,636	934	57.4	
Central Pacific	2,490	2,242	248		11.1	18,582,195	15,817,292	2,764,903			17.5	7,463	7,055	408	5.7	
Chesapeake & Ohio	435	435				2,454,577	1,757,377	697,200			39.7	5,642	4,039	1,603	39.7	
Chicago & Alton	840	777	63		8.1	7,128,906	5,202,663	1,925,943			37.9	8,486	6,944	1,792	26.8	
Chi. & Eastern Illinois	215	151	64		42.6	1,170,030	793,431	376,599			47.5	5,442	5,254	108	3.2	
Chi. Mil. & St. Paul	2,701	1,930	861		44.6	11,688,810	8,951,862	2,736,948			30.6	4,188	4,628	450	9.8	
Chi. & Northwestern	2,418	2,206	212		9.6	17,898,340	14,772,478	3,125,862			21.2	7,616	6,086	1,602	16.7	
Chi. St. Paul, Minn. & O.	278	244	34		14.0	1,449,430	1,125,451	323,979			28.8	5,214	4,612	602	13.1	
Chi. St. P. & Minn.																
O. St. P. & S. C. Div	488	340	148		43.5	1,346,140	1,017,178	328,962			32.3	2,759	2,991	232	7.7	
Cin. & Springfield	81	81				826,388	720,251	106,137			14.7	10,202	8,892	1,310	14.7	
Cleve. Col. Cin. & Ind.	391	391				4,007,541	3,341,444	666,097			19.9	10,249	8,846	1,703	19.9	
Cleve. Mt. V. & Del.	156	157			1.6	383,804	352,841	31,053			8.8	2,588	2,247	341	15.4	
Denver, So. Park & P.	451	337	114		33.8	3,103,420	1,906,586	1,196,834			18.9	6,881	3,247	3,637	110.0	
Des Moines & Ft. D'ge	134	91	43		69.2	1,080,369	766,681	923,718			120.4	10,977	8,425	2,552	30.4	
Det. Lansing & N'o	84	84				288,028	201,166	86,859			43.2	3,429	2,385	1,034	43.2	
Flint & Pere Mar.	216	203	13		6.4	1,090,315	897,507	92,808			9.3	5,048	4,914	134	2.7	
Flint & Pere Mar.	206	280	18		7.5	1,446,393	1,030,968	415,335			40.2	4,854	3,082	1,172	31.8	
Grand Trunk	1,273	1,351		78	5.8	7,770,805	8,302,459	1,468,346			17.7	7,075	6,145	1,539	25.1	
Great Western	526	526				4,747,444	4,108,481	638,963			15.5	9,026	7,811	1,215	15.5	
Hannibal & St. Jo	292	292				2,276,669	1,744,072	532,797			60.6	7,797	5,979	1,808	30.6	
Indianapolis & Texas Cen.	321	505	16		3.2	3,297,353	2,223,455	473,000			16.8	6,329	5,911	738	13.2	
Ill. Cen. Ill. lines	801	801			4.3	5,785,053	5,190,010	395,943			11.4	6,494	6,077	417	6.8	
Ill. Cen. Iowa lines	402	402				1,539,242	1,388,386	147,856			10.7	3,821	3,454	367	10.7	
Ind. Bloom. & West.	212	212				1,118,460	1,054,680	63,777			6.1	5,276	4,746	530	11.0	
Inter. & Gt. Northern	531	521	10		1.9	1,707,389	1,557,593	144,806			9.3	3,206	2,990	216	7.2	
Lake Erie & Western	342	308	34		11.0	1,206,222	620,441	585,787			94.5	3,327	2,014	1,513	133.1	
Louisville & Nash.	1,533	1,022	511		50.0	8,501,233	3,525,375	3,175,081			59.6	5,545	5,211	334	6.5	
Marq. Hought. & Ont.	86	86				781,366	538,599	242,767			45.1	9,098	6,252	2,826	30.9	
Mem. Pad. & Charleston	292	292				1,055,021	770,655	284,366			36.9	3,613	2,820	974	34.8	
Mem. Pad. & No.	115	115				196,128	144,640	51,488			34.8	1,706	1,258	448	34.8	
Mo. Kan. & Texas	789	789				3,804,398	2,983,365	841,033			28.4	4,840	3,770	1,070	28.4	
Mobile & Ohio	506	512		6	1.2	1,982,877	1,910,835	172,027			9.5	3,919	3,537	382	10.9	
Nash. Chatta. & St. L.	454	454				1,873,453	1,615,225	258,228			16.0	4,349	3,558	791	22.0	
N. Y. C. & Hud. R.	1,013	1,013				30,772,015	26,521,216	4,250,799			16.0	30,377	26,181	4,196	16.0	
Northern Central	326	326				4,556,076	3,083,449	862,427			23.3	13,676	11,350	2,946	23.3	
Northern Pacific	697	644	53		8.2	2,332,156	1,898,471	442,885			34.4	3,246	2,544	702	45.1	
Peac. & Elkton	185	185				408,557	304,115	104,438			20.3	1,981	1,644	347	20.3	
Peoria & Evans.	1,878	1,831	47		37.1	27,712,440	31,106,355	6,455,891			21.0	20,080	17,022	3,058	17.9	
Penn. Dec. & Evans.	192	78	114		146.2	4,088,857	239,303	169,554			70.9	2,129	3,081		952	30.7
St. L., A. & T. H. M. L'ie	195	195				1,274,245	980,132	344,113			37.0	6,535	4,770	1,765	37.0	
St. L., A. & T. H. B. Line	71	71				599,600	500,770	98,830			19.7	8,445	7,053	1,392	19.7	
St. L., Iron Mt. & So.	685	685				5,603,319	4,637,198	966,121			20.8	8,180	6,770	1,410	20.8	
St. Louis & San Fran.	364	383	181		47.2	2,470,644	1,440,880	1,029,754			71.5	4,381	3,702	619	16.3	
St. P. Minn. & Man.	652	565	87		15.4	2,890,141	2,369,940	490,201			40.7	4,387	4,194	193	4.6	
Scioto Valley	100	100				391,743	266,229	125,514			11.5	2,917	2,620	297	11.3	
Wab. St. L. & Pacific	1,792	1,386	406		33.9	11,373,483	8,130,160	3,243,323			39.9	6,347	9,076	2,717	4.4	
Wisconsin Central	454	454				1,035,338	744,771	290,557			39.0	2,280	1,040	640	39.0	
Total, 51 roads	32,027	28,293	3,734	85		238,240,960	190,030,082	48,210,578			25.4	7,439	6,717	722		
Total increase					19.2			48,210,578							10.8	



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EDITORIAL ANNOUNCEMENTS.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT in the ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

NOVEMBER EARNINGS.

In our monthly tables this week, we have reports of earnings for November from 57 railroads, having, in the aggregate, 37,063 miles of road in 1880, which is 16.1 per cent. more than they worked in November, 1879, and about 42 per cent. of the total in operation in the country. The aggregate earnings of these roads increased from \$22,191,167 to \$26,828,495, or 20.9 per cent., and their average earnings per mile increased from \$679 to \$709, or 4.4 per cent. Of the 57 roads, only six show any decrease in total earnings, and only eleven in earnings per mile. In the average earnings per mile, the increase over 1879 was larger than in October or September, but smaller than in any other month of the year. In successive months the percentages of increase have been:

Jan., increase, 16.0 per cent.	July, increase, 9.7 per cent.
Feb., " 12.5 " "	Aug., " 12.0 " "
Mar., " 19.0 " "	Sept., " 3.6 " "
Apr., " 14.3 " "	Oct., decrease, 0.2 " "
May, " 10.4 " "	Nov., increase, 4.4 " "
June, " 16.7 " "	

In 1879 our table for November (including 38 roads), showed an increase of 4.6 per cent. in average earnings per mile over 1878, and the 27 roads reporting in 1878, showed a slight decrease from 1877. In all these years traffic was heavy and rates generally good and well maintained in November. In 1880, however, the rates on a very large part of the freight (through east-bound) were lower than in either of the other three years. The increase in earnings per mile is the more satisfactory, because it is made in spite of a large increase in mileage.

The largest increases (in earnings per mile) are 75 per cent. on the Cairo & St. Louis, 61½ on the Chesapeake & Ohio, 91 on the Denver & Rio Grande, 79 on the Des Moines & Fort Dodge, 54 on the Peoria, Decatur & Evansville, and 37½ on the Wisconsin Central. Notable for other reasons is the increase of 32 per cent. on the Central Pacific, which hitherto, for several years, has generally showed decreases. The Wabash, which now reports from a system similar, at least (though considerably increased), to that worked the

year before, shows an increase of 11 per cent. More notable still is the decrease of 37 per cent. in total earnings, and of 57 per cent. in earnings per mile, of the Denver, South Park & Pacific.

Seven roads in the list have a large amount of through trunk-line traffic. All of these show an increase, which, in the aggregate, is 12½ per cent., and as there was but a trifling increase in their mileage, the increase in earnings per mile was nearly as great—much more than the average for all the roads.

The only notable disturbance of rates in November was that caused by the Wabash-Alton passenger war, which lasted all the month, and affected five of the roads reporting, but so small a portion of the traffic of the most of them that we could not expect to trace its effect on their earnings.

Below we give the November earnings per mile of a number of roads for seven years:

	1874.	1875.	1876.	1877.	1878.	1879.	1880.
At. Miss. & O.....	\$463	\$377	\$411	\$420	\$488		
At. Top. & S. F.....	\$229	\$251	\$24	\$20	\$67	\$78	
Bur., C. R. & Nor.....	239	319	258	337	298	341	385
Cairo & St. L.....	276	187	136	109	130	155	171
Cent. Pacific.....	1,007	1,069	969	969	705	633	735
Chesapeake & O.....	941	609	374	369	369	340	350
Chi. & E. Ill.....	531	426	473	556	585		
C. Mil. & St. P.....	496	692	547	632	468	504	409
Chicago & N. W.....	584	664	622	612	657	695	711
Cin., Ham. & D.....	708	742	606	547	587	596	675
Cin., Ind., St. L.....							
& C.....	830	834	628	551	585	720	690
C. C. & Ind.....	898	904	930	723	759	937	1,080
C. Mt. V. & Del.....			191	229	220	215	229
Denver & R. G.....		253	243	267	351	387	741
Flint & P. M.....	409				349	407	515
G. H. & San An.....					681	631	666
Georgia.....	620	614	619	551	392	434	553
Hannibal & St. J.....	612	573	523	590	711	665	699
Ill. Cen. in Ill.....	732	814	609	641	583	575	610
Ill. Cen. in Iowa.....	405	362	360	318	350	340	407
Ind., B. & West.....	411	272	236	442	435	456	
Int. & Gt. Nor.....	411	408	358	454	465	461	
Louisv. & Nasuv.....	552	527	519	559	6.8	623	506
Mem. & Charles.....			414	379		449	477
Mo., Kan. & Tex.....	356	382	413	349	367	493	472
Mobile & Ohio.....	523	485	540	480	612	611	498
Nash., C. & St. L.....	450	432	456	456	450	384	401
N. Y. C. & H. R.....					2,567	2,765	3,008
Northern Cen.....	1,321	1,362	1,345	1,143	1,117	1,158	1,408
Paducah & Eliz.....				177	150	226	203
Pennsylvania.....	1,917	1,866	2,068	1,717	1,677	1,673	1,847
St. L. A. & T. H. (Belleville line).....	661	714	685	663	722	739	959
Do. (main line).....					392	518	562
St. L. I. Mt. & S.....	493	628	658	667	783	939	915
St. L. & S. F.....	531		385	345	363	411	453
Scioto Valley.....				139	275	293	288

Here the November earnings of 36 roads are given for the last three years, of 31 roads for the last four years, of 29 roads for the last five years, of 26 for the last six years, and of 21 for the last seven years. Of the 21 reporting for seven years nine had larger earnings in 1880 than in any other of the six years—the best evidence of decided prosperity. In 1880, 29 roads out of 37 had larger November earnings than in 1879, 30 out of 36 larger than in 1878, 25 out of 32 larger than in 1877, 22 out of 30 larger than in 1876, 14 out of 26 larger than in 1875, and 11 out of 23 larger than in 1874. Among those that had larger earnings per mile in 1874 than in 1880 are several important roads—the Central Pacific, the Chicago, Milwaukee & St. Paul, the Cincinnati, Hamilton & Dayton, the Georgia, the Illinois lines of the Illinois Central, the Mobile & Ohio, and the Pennsylvania. But on most of these the percentage of working expenses has fallen so that the net earnings in 1880 were probably the largest—in some cases much the largest.

For the eleven months ending with November our table has reports from 51 railroads, having in 1880 in the aggregate 32,027 miles of road, which is 3,734 miles, or 13.2 per cent. more than they worked the preceding year. These roads earned \$238,240,660, which is \$48,210,578, or 25.4 per cent., more than they earned the year before, and their average earnings per mile of road increased from \$6,717 to \$7,439, or 10.8 per cent., which, especially considering the large amount of new road, is a very large increase. Last year 30 railroads reporting for the eleven months showed an increase of 1½ per cent. over 1878 in their average earnings per mile, and 89 roads whose returns for 1877 and 1878 we published May 23, 1879, showed an increase in 1878 of 4.9 per cent. over 1877 in average earnings per mile for the whole year, which shows how much greater the increase was last year than it has been before.

Of the 51 roads reporting in our table for the eleven months, not one earned less in 1880 than in 1879, and only four—the Atchison, Topeka & Santa Fe, the Chicago, Milwaukee & St. Paul, the St. Paul & Sioux City, and the Peoria, Decatur & Evansville—have smaller earnings per mile, which in every case is plainly attributable to a great increase of new road with light traffic, the roads all being more profitable than ever before. Very large increases are reported by several roads: by three more than 50 per cent., by six more than 40, and by eighteen more than 25 per cent. in earnings per mile. An unusually large number of Southern roads (eleven) report, showing rather less than more than the average increase.

Nine roads largely engaged in carrying through freight between the East and the West, and which had

5,926 miles of road in 1879 and 31 miles less in 1880, earned in the latter year 21.4 per cent. more. Having 21.8 per cent. of all the road reporting, they gained 31 per cent. of the aggregate increase, and their average earnings per mile increased from \$11,785 to \$14,383, or 22 per cent. The average of all the other roads, which had an increase of 16.8 per cent. in their aggregate mileage, increased from \$5,374 to \$5,572, or 9¼ per cent.

On the trunk lines and their immediate connections the increases varied only from 15.5 per cent. (on the Great Western) to 17.9 on the Pennsylvania. Almost everywhere the increase has been so great that no road has cause to envy its rivals.

Reports for December, so far as received, show a continuance of increasing earnings. December was an extraordinary month for earnings in 1879, however, when the rates on east-bound freight were higher than in 1880, and the average increase of 42 railroads was 18.8 per cent. in earnings per mile over 1878. Simply equalling last year's earnings will be doing exceedingly well, but traffic has generally been considerably larger, and enough so, doubtless, to more than make up for the lower rates. There is now good promise of a heavy winter business; and besides the heavy grain and provision traffic from the West to the seaboard usual in the winter, there are likely to be considerable shipments of anthracite from the East to the West—a business which heretofore has scarcely existed in winter. This year there is a short supply in the West (owing partly to the unexpected closing of navigation), and though very low rates must be accepted for such freight, yet as it will be carried chiefly in grain cars which otherwise would be hauled back empty, the receipts will be nearly all so much-addition to the net profits.

THE LAW OF PREFERENCES.

The fiscal arrangements of the large companies have become, in recent years, so complex as to give rise to very novel and intricate questions upon the relative rights of various classes of holders of preferred bonds, or shares, when the time for considering an annual division of profits arises. What is the legal effect of creating preferred stock, or issuing bonds with preference? And in what order can the various holders claim to share in earnings? It is not practicable—at least not in an article—to formulate any general principle covering the subject. The rights are governed primarily by the terms and conditions of the contract or arrangement by which the preference is declared. The particular stipulations under which a preferred stockholder paid for his shares have more to do with determining his preference than any general rules of law. But a brief statement of very recently reported decisions in this field will be of interest.

The principles that a preference cannot be created in favor of one class of shareholders over another without the assent of the latter, but that such assent need not be given by formal vote, is illustrated by a recent decision of the New York Court of Appeals. The corporation in question was a mining company; but the principles involved are equally applicable to railroad or other stock corporations. The general facts were, that the Quicksilver Mining Company was organized in 1866, under a special charter, and with a capital stock of ten millions in shares of \$100 each. The entire stock was issued in one certificate to the President and Treasurer, the reason being that the company was organized to buy out a Pennsylvania mining company, and it was desired that the President and Treasurer should, in turn, distribute the new shares among the holders of the old, in payment for the property of the old company. This distribution was made. Some time (two or three years, apparently) after the organization of the new company, the proposal was mooted, in a stockholders' meeting, to raise additional working capital by calling in shares, at the option of holders, and issuing instead preferred shares, for which, however, the takers should pay a bonus. About three-quarters of the shares were represented at the meeting, and the vote in favor of the plan was unanimous. Resolutions were passed that the Treasurer should receive subscriptions for preferred stock; that such stock should be issued only to holders of original stock, and upon their surrendering it and paying \$5 per share; that the original shares, as surrendered, should be canceled; and that the preferred stock should be entitled to draw 7 per cent. interest annually out of the net earnings, and any surplus of the earnings remaining should be divided between the preferred and the common stock. This arrangement was fully carried into effect. Nearly half the shares were surrendered, and preferred shares taken and paid for instead. The two kinds of stock were introduced at the New York Stock Exchange, and

were often bought and sold under the two designations, "Quicksilver common" and "Quicksilver preferred"; the latter always bringing the higher price. For four or five years no protest was made nor suit brought by any stockholder adverse to this classification of the stock. At length, however, dissatisfaction arose, and three suits, representing different claims, were instituted. They brought forward chiefly these two questions: 1. Had the corporation power to change the character of the stock? 2. Could stockholders, after so long acquiescence, object? Upon the first question, the view taken by the Court of Appeals is, that the company might, when it first offered to receive subscriptions, have offered its shares in the two forms, common and preferred; but that after shares had been subscribed and taken, there remained no power in the corporation to change their character. The rights of each shareholder were fixed by the by-laws as they existed when he subscribed and paid for his stock. Shares of corporate stock give the holder a fixed or vested right in the division of the profits or earnings of the company while it exists, and of its assets when dissolved. That right cannot be taken away from any shareholder, without his assent, by the vote of other owners, unless a right to make a change has been in some manner reserved beforehand. It is very true that stock corporations have some power of borrowing money; but, when they do so, they must charge all shares alike with the burden. It is very true that corporations can change their by-laws; but this power does not extend to making changes which impair vested rights or violate general principles of law. It is very true that corporations have some power of increasing their capital; but the Quicksilver arrangement was not an increase of capital. The number of shares and their nominal value remained the same. Therefore, when the resolutions were passed, they were obligatory only upon those who attended the meeting and voted for them; the absent minority were not bound by the vote. But upon the second question the decision is that the minority did afterward become bound by their acquiescence in the change. All the arrangements were publicly made, and must have been known to all shareholders who gave any proper attention to affairs. A large sum had been drawn into the company's treasury in payments for preferred stock, and this stock had been freely bought and sold in the market. It would be unjust to the holders of it to remand it, after four years of quiescence, to an equality with the common stock.

A recent decision of the United States Supreme Court shows the authority and disposition of courts of justice to protect a preference by declaring and enforcing a lien in favor of the claimant when circumstances render such course just, even though the contract creating the preference does not say in so many words that there shall be a lien. Before the war, the Pacific Railroad Company of Missouri was chartered and built about 200 miles of road, under arrangements by which the state loaned bonds in aid of the enterprise, and had, for the time being, control of the earnings of the road by way of security. The earnings were in charge of a "Fund Commissioner," appointed on behalf of the state. During the war a raid devastated the road, and after the war was over the company memorialized St. Louis County for a loan of county bonds to enable it to rebuild and extend. The memorial said: "We believe that the earnings of the road will soon pay off the loan." It did not, however, in terms, promise that the bondholders should have a lien upon the earnings. The county authorities expressed willingness to make the loan if the county could be justly secured: and thereupon an act of the legislature was passed, saying that the county might lend seven hundred county bonds (of \$1,000 each) to the railroad company, and directing the Fund Commissioner—who was, all this time, receiving the income of the road, to pay into the county treasury, out of the earnings of the road, \$4,000 to meet the interest on the bonds. This act was accepted by the company and it received and sold the bonds. Subsequently, however, the company executed mortgages upon its entire property. One of these mortgages was foreclosed, and the claim was then advanced on behalf of the holders of the county bonds that their preferential rights ought, in justice, to be recognized to the extent of ordering that they should be paid in advance of mortgagees. The Supreme Court holds this claim to be well founded. The opinion reviews the complicated circumstances under which the bonds were sold, and shows that, although the parties failed to say so explicitly, yet the intention of the railroad company, the county and the legislature evidently was to make a specific appropriation of the earnings of the road for the payment of the bonds; the prior right of the state even having been waived for this purpose. This being

the intention, courts of justice have power to carry it into effect, not only against the railroad company, but also against those who had notice of the circumstances when they bought bonds afterwards issued. And as the transaction was public, and embodied in a law of the state, all persons must be deemed to have had notice of what was done.

There is a noteworthy pair of decisions by the Supreme Court upon the question what reservations of money may be made, by the direction, from the gross receipts of the year, for various heads of expenditure, in cases where preferred stock or bonds have a claim upon the entire net earnings. In other words: What may be deducted for expenses in ascertaining profits or net earnings, when there exists a special contract pledging the profits or net earnings as a security or sinking fund for a favored class of stockholders or creditors? In absence of any such contract the general understanding is that declaring dividends rests in the discretion of the board; the directors may reserve whatever portion of earnings seems needful to be applied toward improvement of the road, as well as for actual operating expenses. And there are familiar and well established rules for computing net earnings where no preferential claim upon them is advanced. But suppose the "net earnings" have been, by the terms of issuing preferred shares or bonds, specifically appropriated—how far does such fact modify the powers and duties of the board? One of the Supreme Court decisions upon this subject will be well remembered as involving the Union Pacific Railroad. The land grant and loan of government bonds made to that company were upon a condition that 5 per cent. of the net earnings of the road should be applied toward paying the bonds. When the direction came to compute earnings the directors claimed to deduct from the receipts not only ordinary disbursements for working and maintenance, but also the expenses of keeping up the land department, with its surveys, offices, negotiations and accounts, and also payments of interest on indebtedness. But the Supreme Court said that the land department must be laid out of view altogether, in computing the net earnings; the proper way was to deduct from the aggregate of fares, freights, and sums earned by transportation for government, the expenses of operating the road and making ordinary improvements and repairs, but not deducting interest on indebtedness. The other decision involved the Erie Railway under former management. To obtain additional capital the holders of stock and bonds united in an agreement that some new preferred shares should be issued which should draw preferred dividends out of the net earnings of the road. Subsequently the company incurred unusual expenses in leasing certain auxiliary roads and in borrowing money which was expended in repairs and equipment; and the fiscal condition, in one year, was such that if all these expenditures were to be deducted from the general receipts, there would be little or no residue for even the preferred stockholders. One of them, therefore, filed a bill claiming that the leased roads and the borrowed money ought to be laid out of view in determining his rights. He was entitled, he said, to such dividend as could be declared from the receipts of the road as it existed when he loaned his money, after deducting ordinary current expenses of operating. But the decision was that the contract with the preferred creditors did not forbid leasing branches or improving the property. The road, branches and all, must be considered as a whole; its entire receipts, as it existed from time to time, should be ascertained, and the entire expenditure actually made in carrying it on should be deducted in ascertaining the net earnings.

The subject of computing annual income where branches are in question is presented in another aspect by a group of cases just reported from Georgia. The tax payable upon certain railroads was limited by law to one-half of one per cent. of annual income. The Supreme Court said that the percentage must be computed upon the actual gross earnings of the road, irrespective of whether it were operated independently or were leased to and formed a branch of another company. Even if leased, the annual rent was not its annual income; if such a rule were allowed, the companies could easily evade taxes at nominal rents. Each company, however operated, must pay a tax proportioned to its real receipts.

An Index to Inventions and Discoveries.

In the Report of the Commissioner of Patents for the year 1879, which has just been published, he recommends "that provision be made without further delay for the preparation of a general analytical index of inventions and discoveries." He calls attention, too, to the fact that thirty years ago Commissioner Ewbank, in his annual report for

1848, urged this subject upon the consideration of Congress. In that report he said:

"However serviceable to applicants the appointment of examiners has proved, the system of search is necessarily defective for want of such a work. It is impossible in every case that comes before them to wade through the numerous treatises, journals, foreign and domestic, encyclopedias, etc., and the piles of specifications and caveats in the office. Their whole time would not suffice for this. Yet, to arrive at a safe conclusion, the contents should be known to them. Patents have been issued for devices already figured and described in popular journals. A general and analytical index only can prevent this. For want of it the labors of the examiners result in no permanent advantage to the public, the office, or to inventors, other than those on whose inventions they pass. No results are recorded, and hence (except when the memory of an examiner supersedes the necessity), the same routine of reference to serial and standard works, to models, specifications, etc., is, without ceasing, repeated. ***

"It would be difficult to overrate the saving of time, money, material, and mental expenditure that would accrue to the country if the ingenious had the means of readily ascertaining what has been done in the lines of their speculation. A very inadequate idea may be gathered from the number of applications for patents rejected and suspended yearly for want of novelty or merit. In 1848 there were 968, and in 1849 over 1,400. Yet cases that came under the notice of this office constitute but a small part of the labors of those who sacrifice years in unfruitful researches for lack of information which an index of inventions would give them.

"In a pecuniary point of view, such a work is therefore most desirable in this office, to inventors, and the public at large. When made accessible to popular reference it will be the saving of millions. No state paper could surpass it in importance, nor in lasting value. Till it is done a majority of applicants for patents must continue to meet with some disappointment. The only safe rule with them is always to make themselves acquainted with what has been attempted before incurring any serious outlay. They should never presume that their devices have not entered other heads than their own until, by a searching inquiry on every hand, the presumption remains in their favor unimpaired. No better advice than this can be given them. But how are they to follow it? Nineteen-twentieths have few or no reliable sources of information within their reach, and not one in a hundred can afford the expenses of a visit to Washington, and a residence there for the purpose of consulting the office records and library."

Commenting on the recommendation of his predecessor the present Commissioner says:

"Each succeeding year has augmented the force of most of the reasons suggested by Commissioner Ewbank for the preparation of this index. It is impossible now to estimate the advantages which inventors, the public, and this office would derive from such a work if it was in the hands of the examiners and accessible to the public. The saving of time and money which would result from its use to the office would be immense. It is, of course, impossible to estimate the millions that would be saved to inventors, and to those who use inventions, if the knowledge which it would furnish could be accessible to them."

There are abundant reasons for believing that neither Commissioners Ewbank nor Paine have at all exaggerated the value of such an index as they have recommended to be made. In fact, as their language indicates, there are no means of estimating it which on examination do not appear to give inadequate results.

What is also quite singular is that such an index would be valuable not only to the Patent Office, but equally so to inventors, and, perhaps, more than all, to the users of patented inventions.

Such an index, in fact, should be complementary to the patent law itself, and without it it is impossible to carry out the theory on which the law is based, and this failure inevitably works great injustice to the community, misleads inventors and results in a great waste of their time, money and thought, which is not discovered until after expensive litigation has thrown light on what an index to inventions, discoveries and the arts generally would have revealed.

The law specifies that patents are granted for the discovery of "any new and useful art, machine, manufacture, or composition of matter." In the *Railroad Gazette* of Jan. 3, 1879, the distinction was shown between the theory on which patents and copyrights are based, a distinction which often does not seem to be recognized by writers on the subject. A patent is granted for the first discovery of a new and useful art, etc., "just as great prizes of money were in other days fitly offered for means of finding the longitude at sea, for the discovery of short roads to the Indies," etc. That is, the state says in effect that in order "to promote the progress of science and useful arts," it will grant to the person who first discovers a new and useful art, etc., the exclusive right to his discovery for a limited time. It must be observed that the newness, or more accurately, the firstness—to coin an adjective—is an essential feature contemplated by the law. It is as though the government of Colombia should enact a statute for the promotion of commerce, and say that it would grant a right for a limited time to collect toll to any one who should first discover a "new and useful" route for a ship canal across the Isthmus of Darien. A patent, in other words, is a right granted for first discovery, its object being to stimulate invention by offering prizes of this description. It should be observed that the law confers no rights on the second discoverer. He has no more rights than the second horse in a race. As stated before, a patent is a premium which the State offers for the firstness of an invention, and without this quality of priority it confers no privileges on the inventor. He may spend years of labor and thousands of dollars in perfecting a machine, but if any other person should do it one day earlier, the law would not give the second inventor any rights or privileges, although the first one might not have spent half, or in fact any, thought, labor or money in making his discovery.

It would seem, then, that to carry out the theory of the patent law Congress should provide the most effective

means for determining this element of newness, or priority of inventions. To do this, such an index as is proposed is absolutely essential. To say, as the statute does, that certain privileges will be granted to the first discoverer of any new and useful art, etc., and then not make adequate provisions for determining whether the discovery has the essential element of priority, makes the whole theory of the law inoperative, just to the extent that those who administer it are unable to determine whether an invention is new or not. In fact, some of the most serious objections to the patent laws grow out of this fact, that for the want of proper facilities the commissioner is unable to tell whether an invention is new. The consequence is that patents are granted for old devices, duplicate, and conflicting claims are allowed to different persons, and, worse than all, hundreds and thousands of inventors expend vast amounts of time, thought, labor and money on inventions which a very brief examination of such an index would show to be old, and on which no valid patent can be obtained. The opposition to the whole system is the result, very largely, of the annoyance which manufacturers, corporations and especially railroad companies are subjected to by demands made for the use of devices which are old, but which are claimed as new discoveries, and which an index of technical literature would soon show to be old. With such an index probably many of the patents complained of would never have been granted at all. It would be one of the most effective means of self-protection against what Mr. Raymond, Secretary of the Western Railroad Association, calls the "blackmailing of patent sharks who present frivolous and invalid claims."

Those persons who have never had any experience in such work have no idea of the magnitude of the task involved in making an investigation of the novelty of an invention. A few hours expended in the Astor Library might give them some slight conception of the work required to go through the countless volumes of periodical literature, the numberless scientific books, the rows of reports of scientific associations, and the scattered copies of sporadic pamphlets, which are like the leaves of the forest in number. It is a saying among patent experts—which like most maxims is not entirely true—that any patent can be proved invalid for want of novelty, if only the parties interested will spend enough money to make a sufficiently extended search, and lawyers would generally much prefer to be on the side of the defendant in a patent case than on that of the plaintiff.

It should not be supposed though that an index of inventions and discoveries will be of service only in aiding those who use or make patented articles to show that inventions are not new. Inasmuch as the law only contemplates granting patents to the first inventor, it is obvious that no others are entitled to the benefits which it confers. It of course happens that an inventor often honestly but ignorantly believes that he is the first discoverer, when sufficient investigation would show, as it often does after he gets into court, that he is not. To such the index would be very useful. More than that, if it were made, as it probably should be, a topical index to all technical literature relating to the "useful arts, machinery, manufacturers or composition of matter," its use would not be confined to inventors alone, but it would be of the greatest value to all who are engaged in making investigations, or are searching for knowledge in the field of applied sciences or in the useful arts. With reference to the literature of these it would confer a certain degree of omniscience on any one disposed to consult it. It would lay before him all that is known or has been done of which any record exists in the books of the Patent Office library. It would be an aid to invention, as well as a protection against invalid patents.

The rapid growth and the increasing complication of inventions, and the claims for them, makes some work of this kind more and more needed each year. Some of the patents recently granted are almost appalling in the length and complication of the specifications. A recent one on a telephone system has forty-five different claims, all of unusual length and covering nearly three pages of the *Official Gazette* of the Patent Office. There is no reason for believing that this tendency will be lessened, but rather that it will increase. The number of expired and unknown patents, of course, is receiving a progressive addition each year. The flood of technical literature rises higher and higher with the advance in knowledge and the increase in population, so that it will soon become almost entirely impossible to know whether an invention is new or old, unless some index is provided as a guide.

To engineers, manufacturers, investigators, authors and editors of technical journals such an index would be a universal encyclopedia, which would indicate where any existing knowledge can be found. It would be as useful as a compass in a wilderness, or as a magnet, if there were such, that would indicate the locality of precious minerals buried below the ground.

The work will of course be one of very great magnitude, and which only the national government or some one or more persons of immense wealth could undertake and continue. It will be necessary, of course, to form a library of technical literature as complete as possible. This would then require to be indexed, and the process continued indefinitely on the current accessions which are and will be added each year. This will make it a perpetual work, which only the general government of a great nation could be expected to maintain.

It is, of course, true, as the present Commissioner says, that a work of such magnitude should not be undertaken without a most thorough consideration of the method to be adopted for its accomplishment. Precisely how this should be done,

or exactly what preliminary legislation is needed, it is perhaps premature to say, but it would be proper for all the engineering and scientific societies to unite in urging some action on Congress.

The fact that the Patent Office is accumulating a surplus fund each year will leave no room for the objection that the work will lay any new burdens on the people. The balance on account of the patent fund in the United States treasury on the first of January, 1880, was \$1,420,806.56. This has been derived from the fees paid by inventors. They have, therefore, a clear right to demand that it shall be expended for the benefit of the class who paid it.

Probably there would be little difficulty in securing the required legislation, if the persons and the associations interested in it could be induced to unite their efforts in accomplishing it.

A German Plan to Bring the Influence of Shippers to Bear on State Railroad Management.

With the concentration of the railroads of a country in a single authority, even if it be the state itself, the difficulty of making public opinion felt becomes greater; because the customer of the railroad cannot offer to transfer his business from one line to another in consideration of better treatment. And a state management (if it is not shamefully ineffective) must necessarily be through a corps of officials and employees with permanent tenure during good behavior, having few interests in common with the bulk of the customers of the railroads, especially the shippers of freight. This seems to have been recognized in Prussia, where most of the important lines have been attached to the state system, and a remedy for it is sought by a bill pending which purposes to establish a system of "railroad councils."

These proposed "railroad councils" are to consist of six "district councils" and a "national council." The bill gives as the object of these councils "advisory co-operation in railroad questions of railroads worked by the state." The "district councils" will advise with the state "railroad directories," each of which works a system of roads of from about 900 to 1,500 miles. The "national council" advises with the general management of the state railroads. The councils are to be composed of representatives of commerce, manufactures, agriculture, and forest industries, and the number from each industry for each council is specified in the bill. The members will be appointed on the nomination of the chambers of commerce and the agricultural societies, for the term of three years, and the same persons may be members of several councils at once. The state railroad directories are to consult the district councils on all important questions which affect the transportation interests of their districts, or any parts of them, and especially concerning important changes in time-tables and rates, and the councils may present their advice and require an answer without being asked. The chairman and vice-chairman of each council are appointed by the Minister of Public Works.

The national council will consist of a chairman and vice-chairman appointed by the King; of one commissioner each from the Minister of Public Works, the Minister of Commerce and Industry, the Minister of Finance, the Minister of Agriculture, Public Domains and Forests; of three members from each House of Parliament, and three substitutes for these members, and of representatives from designated administrative districts, provinces, and cities (some one, some two, and some three each), amounting in all to 29, making the whole council consist of 41 members, besides the substitutes. The city, district and province members will be chosen by the district councils for such city, district or province, from persons connected with agriculture, forestry, commerce and manufactures in such territory. The Minister of Public Works may appoint experts to act with the council in special cases.

To this national railroad council will be submitted for its opinion the government proposals for standard rates for passengers and freight; the general regulations as to the application of the rates; the regulations concerning granting or refusing special or differential rates; and proposals for general changes in the operating and road-police regulations, in matters not technical. It must also give its opinion on all important questions concerning the traffic of the railroads when the Minister of Public Works requests it, and it can volunteer its opinion and require the Minister to answer.

The proceedings of this council, with an account of the action taken on its advice, will be laid before Parliament by the Minister of Public Works.

The members will receive 15 marks (\$3.65) a day for the time engaged in the sessions and in traveling to and from them, and their railroad fares, where they do not get free tickets, as they will on the government roads. The members of the district councils, apparently, are not to get any pay.

The composition of each district council is prescribed by the law, so many of such occupations, from each designated part of the district. For instance, the Berlin council will have 30 members, 16 representing trade and manufactures and 14 agriculture and the timber trades, or "forest industry." Of these Brandenburg must supply three representatives of trade or manufactures, and five of agriculture or forestry; Berlin three of trade or manufactures; Silesia three of trade, three of manufactures, and four of agriculture or forestry; Pomerania three of trade or manufactures and four of agriculture or forestry; Saxony one of trade or manufactures and one of agriculture or forestry; and so with all the other district councils, which vary in the number of their members from 24 to 40.

It does not appear that these councils will have any authority whatever; they cannot make or change rates, or prescribe the way in which the community shall be served, or do anything except offer their advice, and bring public opinion to bear. But it is easy to see that their influence might be enormous. The railroad administration would hardly refuse to take their advice without giving very good reasons for it, and it would be compelled to consider it, which in such cases is a great point gained. Moreover, the railroad officials, instead of having to argue each point concerning proposed changes in the public interest would deal almost exclusively with a limited and presumably well informed representative body of shippers, to whom the individuals could prefer complaints and suggest changes, and who thus would be in a position to know whether there was really any popular demand for any of the things proposed. As things now are, two or three loud-mouthed and persistent persons may create the appearance of a popular demand for what really may be only favorable to their particular interests and quite opposed to the interests of the community and not desired by it.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

New York & New England.—Extended from Danbury, Conn., west to the New York line, 6 miles.

Peoria, Decatur & Evansville.—Extended from Parkersburg, Ill., south to West Salem, 6 miles. Also on the southern end track has been laid from Evansville, Ind., northwest to Perryville, 18 miles.

Toledo, Delphos & Burlington.—Extended from Greentown, Ind., west by south to Kokomo, 11 miles. Gauge, 3 feet.

Sedalia, Warsaw & Southern.—Completed from Sedalia, Mo., southward to Warsaw, 42 miles.

Kansas City, Ft. Scott & Gulf.—The *Rich Hill Branch* is extended from Rich Hill, Mo., east to Carbon Centre, 5 miles. The *Ft. Scott, Southeastern & Memphis Branch* is extended from Lamar, Mo., east by south to Golden City, 7 miles.

Burlington & Missouri River in Nebraska.—The *Republican Valley Line, Eastern Division*, is extended from Chester, Neb., east to Hubbell, 7 miles.

This is a total of 102 miles of new railroad, all built in 1880, and bringing up the total reported thus far for that year to 6,241 miles.

THE NEW YORK GRAIN TRADE for the past four years is briefly summarized in two little tables of the last issue of the *Produce Exchange Weekly*, which we further abridge and give below, pending the fuller statements, including the business of other cities, which will come later.

Receipts and exports at New York for four years (two days lacking from 1880) have been as follows, including all grains, and flour and meal reduced to bushels:

	1880.	1879.	1878.	1877.
Receipts.....	171,776,749	164,014,479	152,728,734	102,233,498
Exports.....	135,204,800	124,350,932	109,445,519	62,677,836
Difference....	36,571,949	39,663,547	43,283,155	39,555,662

The receipts this year were 4.6 per cent. more than in 1879, 12.5 more than in 1878, and 68 per cent. more than in 1877. Its exports were 8.7 per cent. more than in 1879, 23.5 per cent. more than in 1878, and 117 per cent. more than in 1877. The excess of receipts over exports has varied comparatively little, but was smaller in 1880 than in any of the other three years, showing that New York does not increase its business in the way of supplying the demands of the surrounding country, but that the growth of its grain trade depends entirely on the export trade. The exports, from being 61 per cent. of the receipts in 1877, rose to be 78½ per cent. of them in 1880.

We may add to this that for the year, lacking one week, the receipts of the seven Atlantic ports (grain and flour) show a decrease of 3,040,000 bushels, which is about ½ of 1 per cent., and the aggregate receipts of the places outside of New York fell from about 195,000,000 bushels in 1879, to 185,500,000 in 1880, or more than 10 per cent.. New York getting 54½ per cent. of the whole in 1880, against 45½ in 1879—certainly a notable gain, and made in spite of a large growth of grain business at New Orleans, and considerable ones at Montreal and Boston. Its increase in its percentage of the total exports has been still greater.

ERIE EARNINGS for October, the first month of the fiscal year, are reported as \$1,899,910, which is 10½ per cent. more than in the corresponding month of last year. The working expenses were but ½ per cent. greater, and the net earnings increased from \$715,722 to \$886,504, or \$170,782, which is 24 per cent. The New York Central gross earnings for the same month increased 6½ per cent., the Pennsylvania's 10.4. The Erie thus gained much more in proportion than either of the others.

For four successive years, the October earnings of this road have been:

1877.	1878.	1879.	1880.
\$1,465,133	\$1,205,755	\$1,713,697	\$1,869,910

Thus the comparisons with previous years are very much more favorable than that with 1879, the increase over 1878 being not less than 57½ per cent., and that over 1877 about 30 per cent.

NEW PUBLICATIONS.

Engineers who read French may be glad to know that the *Annales des Ponts et Chaussées*, one of the oldest and most respected engineering journals in the world, having been published ever since 1831, and being the official organ of the

French Corps des Ponts et Chaussées, which is the oldest official corps of civil engineers in the world, and doubtless the most influential, will hereafter appear in a form more welcome to foreigners. Heretofore a part of each monthly number has been devoted to "memoirs and documents relative to the art of construction," which are of general interest, and another part to "laws, decrees and other acts of the administrative or judicial authorities interesting the service of the Corps des Ponts et Chaussées," and the latter is much the largest, for eleven months of 1879 covering 1,264 pages, against 464 of the other part. The two parts have always been paged separately, but stitched together, and subscriptions were received only for the whole. Beginning with 1881 the parts will be stitched separately and subscriptions received for either, and for the first part, "memoirs and documents," the subscription price for foreign subscribers is 22 francs a year—about \$4.40. And we may say just here that it is just as easy to subscribe for a foreign paper as for an American one, if you know the price with postage and the publisher's address. Any one wanting the first part of the *Annales* can get it by sending a French postal money order for 22 francs to "Dunod, 49, quai des Augustins, Paris." The publication is an octavo of a varying number of pages, with folded lithograph plates. It treats largely of railroads, but not so much so as the *Revue générale des chemins de fer*, which has become very good and valuable; but the *Annales* gives much attention to bridge construction, earth-works, harbor improvements, and similar constructions, which the *Revue* does not touch. The articles are usually long, more like society papers, than anything else we can compare them to. As an example the contents of the last number received (November) are: An obituary of an eminent officer of the Corps (11 pages); on the ice gorges of the Seine in the winter of 1879-80 (22 pages); ice in the Saône, 1879-80 (28 pages); "report on the different systems of signals in use and the application of inter-locking apparatus for the protection of junctions" (43 pages), the latter by the Assistant Superintendent of the Orleans Railroad, and made to the government. Then follow a few pages of engineering news (two notes, one an abstract of the report on Tay Bridge disaster, and the other a translation of our description of the Central Pacific train ferry-boat at Benicia, to which latter the initials of a famous American engineer are appended); also "a bibliographical bulletin," for 1880, which has 20 pages of titles of French works on objects which officers of the Corps are expected to be proficient in. As evidence that in France, where engineers are really influential members of the community, they are expected to know something besides the art of construction, we give below the heads under which these books are classified: 1. Pure mathematics; 2. mechanics, construction; 3. maritime and interior navigation; 4. railroads (24 titles); 5. legislation, administration, political economy; 6. physics, meteorology, geology, mineralogy; 7. agriculture, irrigation, various subjects. Later a bibliography of works in other languages is given.

Fast Express Locomotive for the Philadelphia & Reading Railroad.

The full-page engraving which we give this week represents one of the heavy passenger locomotives which have been built for the Philadelphia & Reading Railroad, and which are running on the Bound Brook Line between Philadelphia and New York.

The schedule time between Wayne Junction and Bound Brook, a distance of 55 miles, is 62 minutes, including one stop and slowing over the Delaware River bridge, which is one mile in length. This requires an average speed of a mile a minute for 55 miles.

When doing full work it is said that the engine consumes 53 lbs. of anthracite coal per minute and evaporates 55 gallons of water in the same time.

It is provided with an oil reservoir in the cab with pipes leading therefrom to all bearings which are likely to need lubrication during the trip, and flexible tubes connecting with the water tank are so arranged as to deliver a stream of water to any of the axle bearings of the engine or tender.

The tank has a capacity for carrying 4,500 gallons of water, which is sufficient for the run from Philadelphia to Jersey City, a distance of 89.4 miles.

The highest speed at which it has been found practicable to obtain a diagram from the engine was 65 miles per hour. A copy of this diagram will be published next week. The original is perhaps the fastest speed diagram ever taken.

The greatly enlarged grate area admits of very economical consumption of fuel, by reason of the exceptionally free passage for air through the bed of fuel, which is maintained at a depth of from four to six inches.

The highest noted speed of the engine was with a train of seven passenger cars, when a rate of 72 miles per hour was attained for a distance of eight miles, which was traversed in six minutes and forty seconds, and with a train of fifteen fully loaded passenger cars it has made the run from Wayne Junction to Bound Brook, 55 miles, in 76 minutes. The boiler is especially designed for anthracite coal, but is equally well adapted to the use of bituminous coal. It will be noted that the distance between driving-wheel centres—78 inches—is much less than usual in passenger engines of its class. This feature, in conjunction with the comparatively short stroke of piston, must prove to be an effectual preventive of the breakage of side rods which has grown to be a frequent occurrence since the advent of high speed passenger service.

Next week we will publish sectional views of this engine, with some comments on its design and operation.

Transportation in Congress.

A telegram to the New York Times dated at Washington, Jan. 5, says:

After a brief struggle the House to-day took up the Interstate Commerce bill, which was reported at the last session by the Committee on Commerce, and is now on the calendar. The bill directly before the House is that reported by the majority of the committee, and differs materially from what is known as the Reagan bill, which was passed by the Forty-fifth Congress, and which is now pending as a substitute for the bill reported by the majority of the committee at the present session. The material point of difference between the bill of the majority and that presented by Mr. Reagan consists in the appointment of three Railroad Commissioners, which is provided for in the committee's bill. This feature is opposed by Mr. Reagan on the ground that such Commissioners would naturally lean toward the interests of the corporations and against those of the general public. Neither the bill nor the substitute prescribes any rates for the carrying of freight, but both prescribe that no discrimination shall be practiced in the charges for carrying the same class of freight from state to state, and that corporations shall furnish, as nearly as possible, the same facilities for the carriage, storage, and handling of all property of like character carried by them, and perform as near as reasonably may be, with equal expedition, the same kind of services connected with the contemporaneous transportation of such property. The substitute proposed by Mr. Reagan omits the commission, and prescribes the terms for and methods by which all freight passing from one state to another shall be transported. It also provides that all carrying companies shall keep schedules posted which shall plainly state, first, the different kinds and classes of property to be carried; second, the different places between which such property shall be carried; and third, the rates of freight and prices of carriage between such places, and for all services connected with the receiving, delivery, loading, unloading, storing, or handling of the same. Copies of such schedules are required to be printed and posted for public inspection in every depot where freights are received or delivered, and such schedules shall not be changed in any particular except by the substitution of another schedule containing the specifications above required, which substitute shall plainly state the time when it shall go into effect. It further provides that it shall be unlawful for carrying companies or others engaged in the transportation of property to allow, directly or indirectly, any rebate, drawback, or other advantage in any form upon shipments made or services rendered by them. The bill was discussed up to the hour of adjournment. Mr. Reagan delivered a speech of considerable ability, in which he showed much familiarity with the subject and a very general acquaintance with the practices of railroad companies in moving freight for long and short distances. Much interest was manifested in the subject, and it is probable that the House will pass a bill on this question before final adjournment.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:
New Haven & Northampton, annual meeting, at the office in New Haven, Conn., Jan. 5, at 11 p. m.
Burlington, Cedar Rapids & Northern, annual meeting, in Cedar Rapids, Ia., Feb. 22.

Dividends.

Dividends have been declared as follows:
Norwich & Worcester (leased to New York & New England), 5 per cent., semi-annual, payable Jan. 10.
Portland, Saco & Portsmouth (leased to Eastern), 3 per cent., semi-annual, payable Jan. 15.
Housatonic, 2 per cent., quarterly, on the preferred stock, payable Jan. 15.
St. Louis & San Francisco, 3½ per cent., on the first preferred stock, payable Feb. 1. This is the first dividend.
Delaware, Lackawanna & Western, 1½ per cent., quarterly, payable Jan. 20. This is the second dividend since the company resumed.
Providence & Worcester, 3 per cent., semi-annual, payable Jan. 1.
Louisville & Nashville, 3 per cent., semi-annual, payable Feb. 1.

Foreclosure Sales.

The Laurens Railroad was sold at public sale in Columbia, S. C., Jan. 4, and bought for \$30,000 for account of the Columbia & Greenville Company. The road extends from Newbury, S. C., to Laurensville, 31 miles; it was built over 20 years ago, but the rails were taken up during the war, and it was not rebuilt until about five years ago.
The Detroit & Bay City road will be sold in Detroit, Feb. 12, under the decree of foreclosure lately granted.

Western Railroad Association.

The following circular is issued from the Secretary's office to the members of this Association:
"The annual meeting of this Association will be held at its office in Honor Buildings (entrance room No. 64), corner Adams and Dearborn streets, Chicago, Tuesday, Jan. 11, for the consideration of the annual report of the Executive Committee, the election of officers, and the transaction of such other business as may be presented."

Vermont Central Railroad Library Association.

At the recent annual meeting of this association in St. Albans, Vt., the report of H. M. Stanton, Treasurer, showed the total receipts for the year to have been \$426.58, and the disbursements \$294.27. There is a balance in the treasury of \$135.31. A circular has been issued by the club stating that the library will be opened Jan. 8, 1881; that the new catalogue is printed, and that with new additions the library now numbers over 2,100 volumes. It is hoped, now the library has been thoroughly reorganized at considerable expense, that many new members will avail themselves of the privileges of the club. Membership is placed at \$3, and a yearly reading at \$1.50. The new catalogue will cost 10 cents a copy.
The object of the association is an excellent one, and it might well find imitators on other roads.

ELECTIONS AND APPOINTMENTS.

Cairo & St. Louis.—Mr. Charles Hamilton has been appointed General Superintendent, in place of L. M. Johnson, resigned. Mr. Hamilton, we believe, was one of the contractors who built the road. He is a civil engineer.

Cincinnati Northern.—At the annual meeting recently the following directors were chosen: A. D. Bullock, C. T. Dickson, Ozro W. Dodds, Benjamin Eggleston, John S. Forbes, George Hafer, J. N. Kinney, Henry Lewis, Albert

Netter, Cincinnati; George Wm. Ballou, Boston; John M. Corse, New York. The board elected John M. Corse, President; Henry Lewis, Vice-President; W. V. McCracken, Secretary; George Hafer, Treasurer. The new officers are all connected with the Toledo, Delphos & Burlington Company.

Cleveland & Pittsburgh.—At the annual meeting in Cleveland, Jan. 5, the old directors were re-elected, leaving the board as follows: J. N. McCullough, B. F. Jones, Pittsburgh; George B. Roberts, William Bucknell, Philadelphia; Frederick Sturges, S. J. Tilden, Charles Lanier, Francis Walker, New York; A. Ferguson, Cincinnati; J. V. Painter, James F. Clark, R. P. Ranney, Cleveland.

Cleveland, Tuscarawas Valley & Wheeling.—Mr. Charles L. Cutter has been chosen Secretary and Treasurer, in place of P. A. Hewitt, who has gone to the Cleveland, Columbus, Cincinnati & Indianapolis road. Mr. W. H. Park succeeds Mr. Hewitt as Auditor.

Indianapolis & St. Louis.—The following circular announces officially a number of changes, of which some note has heretofore been made:

"The following changes have been made, to take effect Jan. 1:

"C. C. Gale is appointed General Superintendent, vice E. B. McClure, resigned.

"H. W. Gays is appointed General Freight Agent, vice J. C. Noyes, resigned.

"The office of Assistant General Freight Agent is abolished.

"A. J. Smith is appointed General Passenger Agent, vice D. M. Kendrick, resigned."

Kansas City, Ft. Scott & Gulf.—Mr. H. P. Jacques is appointed Purchasing Agent of this road and the Kansas City, Lawrence & Southern Kansas. His office will be at Kansas City.

Long Island.—The New York Supreme Court has appointed Austin Corbin Receiver, in place of Thomas R. Sharp, relieved at his own request.

The board has elected Austin Corbin, D. C. Corbin, Wm. Bond, B. S. Henning, Demas Barnes, Alfred Sully, John P. Townsend and Henry W. Maxwell directors to fill vacancies made by resignation. The re-organized board elected Austin Corbin President, in place of Thomas R. Sharp, resigned, and B. S. Henning Vice-President. These changes place the new owners of the stock in full control of the road.

Montpelier & Wells River.—The following circular from W. A. Stowell, Superintendent, is dated Dec. 31:

"H. W. Whitcomb is this day appointed Train-Master. He will have general charge of train-men and the movement of trains. Employees of this corporation are instructed to respect his orders accordingly."

New Sharon, Coal Valley & Eastern.—The officers of this new company are: President, David Morgan; Vice-President, O. G. Drew; Secretary, E. C. Ogg; Treasurer, S. L. Cook. Offices at New Sharon, Iowa.

Oregon Railway & Navigation Co.—Mr. John Miner has been appointed General Freight and Passenger Agent, with office in Portland, Or. He was formerly on the Kansas Pacific.

St. Louis, Iron Mountain & Southern.—At a recent meeting of the board Jay Gould, Russell Sage, Sidney Dillon and Frederick L. Ames were chosen Directors, in place of G. S. Drake, J. R. Lionberger, W. M. Senter and R. A. Edgerton, resigned. It is said that no further change will be made at present.

St. Louis & San Francisco.—A circular just issued announces that, the office of Northeastern Passenger Agent of that road being abolished, Mr. Charles E. Jennings is appointed Northern Passenger Agent, with headquarters at Chicago, the appointment to take effect Jan. 1, 1881.

St. Paul, Minneapolis & Manitoba.—Mr. H. C. Davis has been appointed Assistant General Passenger and Ticket Agent. He has been in the Passenger Department some time.

Mr. Frederick Biddings has been appointed Assistant Engineer of completed roads south of Casselton and Barnsville, and Mr. George W. Tounson, Assistant Engineer of completed roads north of those points. Mr. N. D. Miller has been assigned to duty in the construction of new lines.

Terre Haute & Indianapolis (Vandalia Line).—At the annual meeting in Terre Haute, Ind., Jan. 3, the following directors were chosen: Josephus Collett, F. C. Crawford, Geo. E. Farrington, Alexander McGregor, Wm. R. McKee, D. W. Minshall, Henry Ross. The board elected Wm. R. McKee, President; George E. Farrington, Secretary; J. W. Cruft, Treasurer.

Mr. J. Hill has been appointed General Superintendent, with office in St. Louis. He has been for some time Division Superintendent on the Pittsburg, Cincinnati & St. Louis road.

Vermont Railroad Commissioner.—Mr. Wayne Bailey has been re-elected Railroad Commissioner by the Vermont Legislature. That the duties of the office are not arduous is shown by the fact that Mr. Bailey is also Register of Probate for Rutland County, a justice of the peace, and Assistant Doorkeeper of the House of Delegates.

Warwick Valley.—The board of directors has chosen the following officers for the ensuing year: President and Superintendent, Grinnell Burt; Vice-President, James Burt; Secretary, C. H. Demarest; Treasurer, Thomas Burt; Assistant Treasurer, John Sayer.

Woolen, Mooresville & Dallas.—The directors of this new company are: William Jenkins, Jonas Hoffman, George F. Bason, B. F. Carpenter, Alexander Brevard and Joseph G. Morison. Office at Dallas, N. C.

PERSONAL.

—Mr. C. H. Platt has resigned his position as Superintendent of the Shepang Railroad, after a service of several years on the road.

—Mr. Bement Lyman has resigned his position as Assistant General Passenger Agent of the Cincinnati, Indianapolis, St. Louis & Chicago road, and will go into the wholesale grocery business in Chicago.

—Mr. J. S. Oliver has resigned his position as General Superintendent of the Chicago & Northwestern Railway, on account of continued ill health. Mr. Oliver was for many years Superintendent of the Iowa Division, and was made General Superintendent a few months ago, when Mr. Wheeler was promoted from that office to be Assistant General Manager.

—Gen. Charles B. Stuart, an old engineer, died in Cleveland, O., Jan. 4, aged 66 years. He was born at Chittenden Springs, N. Y., and early in life was engaged as an engineer in the construction of the Philadelphia, Wilmington & Baltimore road. He afterward gave much attention to dock

construction and naval architecture, and published works on both subjects. He served during the war in command of a regiment of engineers, and was afterward for a time Chief Engineer of the New York, West Shore & Chicago road. At the time of his death he was Chief Engineer of the Connott Valley road.

At a recent meeting the directors of the United New Jersey Railroad & Canal Company, the following minute, prepared by Mr. Ashbel Welch, was adopted in relation to the death of Mr. Benjamin Fish, which occurred some months ago:

"The directors of this company have heard with deep regret of the death of their venerable colleague, Benjamin Fish, Esq., the last of the original directors of any of the companies now merged into this, and doubtless the oldest railroad director in America, and probably in the world. As early as 1808, soon after becoming of age, and settling in Trenton, then a village of 1,300 inhabitants, he entered upon the business of transportation, and was continuously and actively engaged in that business, either on his own account, or as an officer of the predecessors of this company, for almost two-thirds of a century. He established an inland transportation line (probably the first) between Philadelphia, then ceasing to be, and New York, then coming to be, the commercial metropolis of America, carrying the goods between the Delaware and the Raritan overland by wagons, and on these rivers at first by sailing vessels, then by steamboats. During the war of 1812, at the time when hostile fleets were hovering around our coast, the munitions of war, including a large amount of heavy ordnance required for the defence of the threatened ports in the East, as well as the whole traffic of the country between the East and South, were carried by Mr. Fish over this inland route. This being before the era of stone-covered turnpikes, when the wheels of the wagons cut in up to the hub, and when the utmost dispatch was required, the task was a severe one, but Mr. Fish accomplished it. This inland transportation line run by Mr. Fish and his partners was an institution perhaps almost as well known as the railroad which succeeded it.

"When the Camden & Amboy Railroad & Transportation Company was organized, fully fifty years ago, this already veteran transporter became one of its directors, and remained continuously a director of that company and its successor until his death. When the road came into use he transferred his business to it, and he remained in charge of the transportation of goods on the road for many years. As a carrier he was the predecessor of the company represented by this board, and a link between the past and the present.

"Mr. Fish, during his long career, engaged in many branches of business. He was perhaps the oldest bank director in the country. In all his pursuits he acted with the same energy, integrity and good sense as in his railroad duties. He was an upright and virtuous man, a faithful friend, a good citizen and a consistent Christian. After serving three generations, he quietly rests from his labors."

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings for various periods are reported as follows:

Year ending Dec. 31:	1880.	1879.	Inc. or Dec.	P. c.
Chi., Mil. & St.	\$13,113,086	\$10,012,713	I.	\$3,100,373 30.9
Denver & Rio Grande	3,452,616	1,227,701	I.	2,224,915 181.2
Louisville & Nashville	9,432,173	5,992,375	I.	3,439,798 57.4
Mobile & Ohio	2,270,808	2,144,478	I.	126,330 5.8
Northern Pacific	2,542,900	2,004,365	I.	538,535 26.8
St. L., I. M. & So.	6,258,419	5,292,611	I.	965,808 18.2
Month of October:				
Eastern	\$264,508	\$248,630	I.	\$15,908 6.4
Month of November:				
Eastern	\$239,554	\$216,767	I.	\$22,787 10.5
N. Y. & New Eng.	210,857	173,712	I.	37,145 21.4
Net earnings	54,923	47,426	I.	7,497 15.8
Month of December:				
Chi., Mil. & St.	\$1,426,086	\$1,060,957	I.	\$365,129 34.4
Denver & Rio Grande	349,196	131,112	I.	218,084 167.7
Louisville & Nashville	930,937	666,800	I.	264,137 39.6
Mobile & Ohio	288,021	316,626	D.	28,605 9.0
Northern Pacific	192,582	115,084	I.	77,498 67.4
St. L., I. M. & So.	655,160	655,413	D.	253 0.04
Third week in December:				
Chi. & Eastern	\$38,077	\$20,884	I.	\$17,193 82.3
St. L., Iron Mt. & So.	192,100	186,808	I.	5,292 2.8
Week ending December 25:				
Chicago & Grand Trunk	\$29,050	\$14,923	I.	\$14,127 98.8
Grand Trunk	213,749	169,341	I.	44,408 26.3

Baltimore grain receipts for the year 1880 were as follows, flour in barrels and grain in bushels:

	1880.	1879.	Inc. or Dec.	P. c.
Flour	1,571,882	1,308,004	D.	263,878 2.8
Wheat	33,414,393	31,084,126	I.	2,330,267 5.0
Corn	16,500,291	23,151,096	D.	6,650,805 28.3
Other grain	1,088,983	2,123,328	D.	1,034,345 20.0
Total grain	54,703,067	56,959,450	D.	2,256,383 8.8

Total flour reduced to wheat.....61,063,077 66,499,470 D. 5,436,393 8.2
Exports for the year were 406,947 barrels and 120,972 sacks flour, 33,301,156 bushels wheat and 14,688,815 bushels corn.

For the week ending Dec. 25 receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past eight years:

Year.	Northwestern receipts.	Northwestern shipments.	Atlantic receipts.
1873	2,697,297	2,005,793	2,005,793
1874	2,147,360	789,047	1,468,313
1875	2,063,225	958,855	1,104,370
1876	2,472,694	964,705	1,507,989
1877	2,528,048	1,069,339	1,458,709
1878	2,548,745	1,149,265	1,399,480
1879	2,865,013	918,954	1,946,059
1880	3,682,228	1,677,592	2,004,636

The receipts of the Northwestern markets for the week are 26 per cent. and their shipments 71½ per cent. more than in the corresponding week of 1-79, but the Atlantic receipts were 7 per cent. less. Compared with previous weeks of 1880, the Northwestern receipts were 26 per cent. less than the week before and the smallest since April, the Northwestern shipments 17 per cent. more than the week before and the largest for four weeks; the Atlantic receipts were 11½ per cent. less than the week before and the smallest since the third week of February.

Of the Northwestern receipts Chicago had 46.8 per cent.

Milwaukee 15, St. Louis 14.9, Peoria 13.8, Toledo 4.5, Detroit 3.1, and Cleveland 1.9 per cent. Toledo, which a large part of the year has stood second in receipts, shows a remarkable falling off; Milwaukee takes the second place, which formerly it generally occupied, but has rarely, if at all, before in 1880. Wheat receipts were insignificant everywhere, except at Chicago and Milwaukee, the former getting 89.4 and the latter 84 per cent. of the whole.

Of the Atlantic receipts New York had 43.8 per cent., Baltimore 21.3, Boston 19.7, Philadelphia 12.2, New Orleans 2.6, Portland 0.3, and Montreal 0.1 per cent. Boston's receipts are the largest for five weeks, and its proportion is the largest it had had in 1880; Portland's were unusually small for a winter week; Philadelphia's were the smallest since the first week of February, and with three exceptions the smallest of the year; Baltimore's the smallest since the middle of May.

Exports from Atlantic ports for five successive weeks have been:

	Dec. 20.	Dec. 22.	Dec. 15.	Dec. 8.	Dec. 1.
Flour, bbls.	157,060	138,359	153,392	132,969	101,828
Grain, bush.	2,611,377	2,363,848	2,046,707	2,461,577	3,903,963

There is thus an increase in the last week after some months of almost uninterrupted decrease. For the eight weeks ending with Dec. 29 the exports compare as follows with those of the corresponding eight weeks of 1879:

	1880.	1879.	Increase.	P. c.
Flour, bbls.	1,068,846	765,619	303,227	39.6
Grain, bush.	27,208,201	28,712,982	1,504,781	1.9

Total bush.....32,552,431 30,541,077 2,011,354 6.6
Thus, though the movement for the last two months was much lighter than for some months previous, it was still larger than last year at the same time.

Chicago receipts for the month of December for four years have been:

	1877.	1878.	1879.	1880.
Flour, bbls.	324,365	293,726	389,972	596,315
Grain, bush.	3,837,251	6,902,896	8,545,060	9,999,804
Hogs, No.	689,585	842,217	742,716	778,491

Compared with 1879 there is an increase of 53 per cent. in flour, 17 per cent. in grain and 4.8 per cent. in hogs.

Milwaukee receipts for the same month have been:

	1877.	1878.	1879.	1880.
Flour, bbls.	241,084	259,238	298,155	305,022
Grain, bush.	2,234,080	2,066,822	2,499,266	2,570,111
Hogs, No.	89,840	149,470	110,522	1,6,052

The increases over 1879 are 13½ per cent. in flour, 2½ per cent. in grain and 5 per cent. in hogs.

Coal Movement.

Coal tonnages for the week ending Dec. 25 were as follows:

	1880.	1879.	Increase.	P. c.
Anthracite	332,110	243,212	88,898	36.6
Semi-bituminous	71,196	49,362	21,834	44.5
Barclay	10,134	9,173	961	10.5

Other Pennsylvania bituminous figures have not been received for the week.

The Western coal trade continues very active, and at many points it is difficult to supply the demand for bituminous coal, while anthracite is very scarce at Chicago and other lake ports, where it is usually in abundant stock.

Cotton Movement.

For the four months of the crop year, from Sept. 1 to Dec. 31, the receipts at the seaboard have been, in bales, for five successive years:

1876.	1877.	1878.	1879.	1880.
2,677,331	2,498,670	2,719,291	3,168,855	3,454,099

This year the receipts are 8 per cent. more than last. The exports for the same period were 2,003,434 bales in 1880, against 1,720,276 in 1879, an increase of 283,158 bales, or 16½ per cent.

New York Shipping.

The foreign and coastwise arrivals at New York for five successive years are reported as follows from the government cargo office, by Mr. Alfred Mabie, Boarding Officer:

	Steamers.	Ships.	Barks.	Brigs.	Schooners.	Total sail.	Total.
Foreign:							
1876	973	336	1,879	1,052	1,486	4,586	5,731
1877	1,074	389	2,254	1,076	1,451	5,170	6,244
1878	1,310	540	2,919	1,021	1,528	6,038	7,348
1879	1,591	681	3,234	1,023	1,546	6,480	8,077
1880	1,895	575	2,893	1,007	1,447	5,922	7,817
Coastwise from East:							
1877	270	23	54	73	9,346	9,396	9,666
1878	263	9	29	60	9,953	9,960	9,323
1879	970	16	45	96	9,566	9,723	9,993
1880	255	10	67	74	7,321	7,572	7,627
Coastwise from South:							
1877	1,077	12	21	16	2,320	2,753	3,830
1878	1,008	3	10	16	2,402	2,343	3,351
1879	1,070	15	46	44	2,176	2,369	3,439
1880	1,222	7	61	64	2,476	2,224	3,446

Though the total number of foreign arrivals was less last year than in 1879, the tonnage of the arrivals doubtless increased, as against a decrease of 564 in sailing vessels of different kinds there was an increase of no less than 304—nearly one-fifth—in steamers, whose average capacity is probably at least twice that of the sailing vessels. The steady and rapid increase in foreign steamer arrivals is noticeable. The number was 95 per cent. greater in 1880 than in 1876.

The coastwise arrivals from the East are more than nineteenth schooners, some of which have very small tonnage. This traffic was much smaller in 1880 than in any of the three preceding years, and even the steamer arrivals decreased a little.

The coastwise arrivals from the South include those from the whole Pacific coast, as well as the South Atlantic and Gulf coasts of the United States. The totals have been nearly stationary for four years, but last year there was a notable increase (14½ per cent.) in the steamer arrivals.

Kentucky Passenger Rates.

A dispatch from Louisville, Dec. 29, says: "The Railroad Commission of Kentucky has been hammering at the railroad companies for the last six months, and urging upon them a reduction of passenger rates to a maximum of 3 cents per mile. The prevailing rates have been 4 and 5 cents per mile. The Cincinnati Southern and the Kentucky Central adopted the proposed reduced rate this fall, and have found that it worked well. Intelligence was received, this evening, that the Short Line had likewise accepted the proposition, and from the present outlook the people throughout the state will soon be enjoying the benefits of cheap travel. The Louisville, Cincinnati & Lexington announces that the new rates will go into effect Jan. 1. It is thought that the

Louisville & Nashville Company, which owns two-thirds of the roads in the state, will also accede to the request of the commission."

Chicago Shipments East.

Under the pool the through shipments east from Chicago were 51,398 tons in the week ending Dec. 25, against 45,667 the previous week, making the business a very large one for any season of the year. The shipments by the different routes in the latter week were:

	Flour—bbls.	Provisions— tons of 2,000 lbs.	Grain— tons of 2,000 lbs.	Total tons.	P. c. carried.	P. c. in pool.
Michigan Central	36,912	8,487	3,263	15,447	30.1	26.0
Lake Shore	37,147	9,119	2,809	15,647	30.4	23.0
Fort Wayne	14,488	3,006	3,903	8,358	15.3	23.0
Pan-Handle	19,153	921	3,808	6,643	12.9	10.0
Baltimore & Ohio	800	1,576	1,077	3,727	5.3	10.0
Grand Trunk	5,321	1,390	659	2,581	5.0	8.0
	113,881	24,490	15,519	51,393	100.0	

A vote was taken last week on a proposition to advance the basis of east-bound rates (Chicago to New York) 5 cents per 100 lbs., making it 40 cents on grain, and it was defeated. The present prospect is that the roads will be able to handle all the traffic offered at current rates; the blockade at the end of November and the beginning of December was largely due to the confusion caused by excessive shipments just before the close of navigation, and the accumulation of cars at one end of the route. A larger traffic can be handled with the same equipment if the movement is steady.

Southwestern Railway Association.

The following circular from Commissioner Midgley is dated Dec. 29:

"Notice is given that all circulars or tariffs of this Association naming rates or classification between Mississippi River points, or any point east thereof, and Missouri River points, in either direction, dated previous to Jan. 1, 1881, are hereby canceled.

"Full information in regard to the rates, classification and instructions which govern on business covered by the Association will be found in the tariffs and circulars dated Jan. 1, 1881, and thereafter."

The Southwestern Passenger War.

The southwestern roads have been pretty quiet for some time, though the low passenger rates continue; but last week the Chicago, Burlington & Quincy and the Hannibal & St. Joseph have reduced fares from Chicago to Kansas City to \$4; it has lately been \$7. Hitherto their rate has been higher than that by the Wabash and Chicago & Alton.

Immigrant Rates.

A dispatch from Chicago, Jan. 4, says: "The general managers and passenger agents of the Western railroads met to-day and passed a resolution to demand of the Eastern trunk lines full rates on all through second-class and emigrant business, taking effect Jan. 1, and a joint telegram was sent to trunk roads as a notification of the action taken. This is, in effect, a notification to the trunk roads that the Western lines will not submit to the deduction of 25 per cent. from their earnings for ostensible application in payment of so-called terminal expenses in New York."

RAILROAD LAW.

Limited Tickets.

Benny Auerbach bought a railroad ticket at St. Louis on Sept. 21, 1877, for New York. On the face of it was an agreement that it was good for a continuous trip, but must be used on or before the date as cancelled by a punch on the margin, and that if the holder failed to comply with the agreement either of the companies might refuse to accept the ticket and demand a full regular fare. The date canceled on the margin was Sept. 26. Auerbach stopped on the way at several places and got on a train of the New York Central & Hudson River Railroad at Rochester, on the afternoon of Sept. 26. He traveled upon the ticket until he arrived at Hudson at 3 o'clock on the morning of the 27th. The conductor then said Auerbach must pay his fare to New York, as his ticket had expired at midnight. Auerbach refused to do so and was put off the train. He brought suit in the New York Court of Common Pleas for damages, and on the trial before Judge Van Brunt the complaint was dismissed upon the ground that the plaintiff should have come upon a continuous trip after starting. The General Term on Jan. 3, Judge Van Hoesen giving the opinion, affirmed the judgment upon the ground, however, that the ticket was a limited one and not good after the end of the day designated by the punch mark on its margin, unless when the holder, after beginning his journey in time to reach his destination in the usual course of travel before the expiration of the limit fixed by the ticket is prevented by delays caused by the railroad company, or incident to the operation of the road.

What Constitutes a Passenger.

On July 23, 1877, A. J. Price was a route agent of the United States Post Office Department, having his route on the Western Pennsylvania Railroad, between Allegheny City and Blairsville. While engaged in performing the duties incident to his office of mail agent an accident occurred through the negligence of the employees of the Pennsylvania Railroad Company operating the Western Pennsylvania Railroad, and Price was killed. His wife brought suit for damages, and, after a protracted trial, a special verdict was found embodying the above facts. The question was, therefore, presented to the Court of Common Pleas of Allegheny County to determine as a matter of law whether or not the deceased, by reason of his employment in and about the cars of the railroad company, was entitled to recover. The railroad company appealed the case to the Supreme Court, claiming that Price's position on the train was clearly such a one as was contemplated by the act of 1868, making him, therefore, a quasi employee of the company. The Supreme Court, in an opinion by Justice Paxson, says that he was clearly within the terms of the act of 1868, and was not a passenger within the exception of the act. To hold otherwise would be to say that persons on the cars had rights superior to those around and about the works, depots, etc. Judgment reversed and judgment for the defendant.—Philadelphia Times, Jan. 6.

THE SCRAP HEAP.

Locomotive Building.

The Baldwin Locomotive Works completed 513 new locomotives in 1880 and rebuilt 17 more, making a total of 530 during the year, besides doing a large amount of other work during the same period. We have no data for comparison, but have the impression that this is the largest number of

locomotives that any one establishment has ever produced in one year.

The Hinkley Locomotive Co., in Boston, have orders on the books sufficient to keep the works in operation until next July.

The Pittsburgh, Ft. Wayne & Chicago shops, in Allegheny, Pa., have lately completed another heavy engine for fast passenger trains, and are building several freight engines.

The Baldwin Locomotive Works, in Philadelphia, have lately delivered two shifting engines and four light passenger engines to the Philadelphia, Wilmington & Baltimore. The light engines are to be used on the West Chester & Philadelphia road.

The Dickson Manufacturing Co., in Scranton, Pa., have orders for several heavy passenger engines with 19 by 24 in. cylinders and 5½ ft. drivers for the Delaware, Lackawanna & Western. They are said to be for the new line to Buffalo.

Car Notes.

The Portland Company, at Portland, Me., are to build five screw-lever dump cars, of the New England Car Co.'s patent, for the Maine Central road.

Gavin Rainnie and J. K. Dunlop, at St. John, N. B., have just completed six heavy snow plows for the Canadian Pacific road.

The Pennsylvania Railroad shops at Altoona, Pa., are just now very busy building new box cars.

Bridge Notes.

The Delaware Bridge Co. has been awarded the contract for the bridge over Franklin Square, in New York, on the approach to the East River Bridge between New York and Brooklyn. The contract price is \$120,000.

The Canadian government has levied upon the iron bridge built over the Chaudiere River, at Ottawa, Ont., by Clarke, Reeves & Co., the ground for this being, as alleged, that the iron was undervalued when brought from the United States; its value being given at 3½ cents per pound, which, the government claims, is considerably below the real value.

Iron and Manufacturing Notes.

Emans Furnace at Emans, Pa., will go into blast as soon as the repairs on it are finished.

Messrs. Crerar, Adams & Co., of Chicago, have purchased and are now sole owners of the Huntington track-gauge patent. This patent covers all gauges having a forked end (causing the gauge to stand perpendicular to the rail it is pressed against) or having the lugs which bear against the rail project down below the gauge heads. This gauge is now used on many of the railroads in the country.

The rolling mill at Brownsville, Pa., has been leased to C. Magee and Andrew Fulton, of Pittsburgh, for five years.

Both stacks of the furnace at Stanhope, N. J., are now in blast, the second one having started up last week.

Alice Furnace, in Birmingham, Ala., has gone into blast. It is now owned by the Alice Furnace Co., a new corporation.

A second stack is to be built at Alabama Furnace, near Birmingham, Ala., by S. S. Glidden, the owner.

The Albany & Rensselaer Steel & Iron Works have started up a new Belgian train of rolls at the works in Troy, N. Y. This train was made by A. Garrison & Co., of Pittsburgh, and is driven by a Porter-Allen engine with 22 by 36-in. cylinder. A new 18-in. bar mill is nearly finished.

The Rail Market.

Steel rails are active, and large sales, both of American and foreign, are reported, prices being about \$58 to \$59 per ton at mill. An increasing demand is reported.

Iron rails are also active, with much inquiry. English rails are quoted at \$44 to \$45 per ton at tide; American, \$45 to \$46 per ton at mill for heavy sections and \$43 to \$53 for light rails.

Old iron rails are held firmly at from \$27 to \$29 per ton in Philadelphia, but few sales are reported.

Railroad spikes are quoted at \$2.65 to \$2.75 per 100 lbs. in Philadelphia; splice-plates, \$2.35 to \$2.50; track-bolts, \$3.50 to \$4.50, according to specification.

British Rail Exports.

For the month of November and the 11 months ending with November, the exports of rails from Great Britain have been:

	1880.	1879.	Increase.	P. c.
November.....	8,131	5,294	2,837	53.7
Steel.....	34,857	23,780	10,057	42.4
Total.....	42,988	29,074	13,894	40.8
Even months:				
Iron.....	124,600	48,472	76,227	157.3
Steel.....	443,117	307,769	135,348	43.9
Total.....	567,816	356,241	211,575	50.4

The exports to the United States of "railroad iron of all sorts," which are nearly, but not quite all, rails were:

	1880.	1879.	Increase.	P. c.
November.....	15,933	9,357	6,576	69.6
Even months.....	207,094	37,932	169,162	445.7

Last year in November this country was giving large orders abroad, but still our imports were two-thirds larger this year, when, however, they were about a sixth below the average imports of the year. The total imports of the eleven months this year (of all rails) would lay 2,353 miles of track with 56 lbs. rails—about one-third of the mileage of new road completed in the year.

The Governor of New York on the Railroad Question.

In his message to the new Legislature Governor Cornell, of New York, refers to the railroad question as follows:

"The last Legislature devoted a large part of its session to the consideration of measures designed to remedy certain evils in railroad management. The two houses having failed to agree, the unsatisfactory condition of this important subject still continues and should receive your thoughtful attention. Aside from public taxation, perhaps, no question so seriously touches the interests of the people at large. Every community and all branches of business are directly affected by it. Unjust discriminations in the rates of transportation cause embarrassment and unnatural competition. Favoritism for one interest results in hardship to another. Stability and uniformity in freight tariffs are necessary for the safe conduct of business. Not only should equality of service be rendered to all citizens, but as well to all communities. For like service all patrons should be placed upon an equal footing, and, as far as practicable, general publicity should be given to freight tariffs.

"In securing justice for the people it is not necessary that injustice be visited upon the railroads. These enterprises that have so largely aided the growth and development of the state, are entitled to fair treatment. With the experience of the past as a guide it is to be hoped that your wisdom will be equal to the importance of this question, which should receive a complete and successful solution at your hands."

Slow Time.

A dispatch from Long Branch, N. J., Jan. 4, says: "The

New Jersey Southern train that left here on Wednesday afternoon last at 3 p. m. returned to-day. It had been to Bayside, 87 miles away, and had spent 93 hours getting there, arriving at 10 a. m. Sunday. There were 60 passengers bound for Bayside. After leaving Bridgeton the train was stuck in a snow-drift, and it took seven locomotives to get it out. Conductor Haines and his crew had their feet, hands and faces badly frozen by exposure in carrying water from the frozen cisterns to the engine's tank."

A Brave Engineer.

The bravery of locomotive engineers has often been dwelt upon, and many heroic acts by the brave fellows have heretofore been chronicled. One of the most heroic deeds on the part of an engineer yet recorded was performed recently by Engineer Bond, of Wabash Engine 327. His engine left Toledo Sunday at 5:55 p. m., pulling the No. 3 west-bound passenger-train. When nine miles west of Defiance, O., one of the driving rods broke in twain on the engineer's side. The fragments tore up through the cab, and threw Bond, stunned and bruised, back on top of the coal in the tender. There was great danger of the broken driving-rod throwing the engine from the track and wrecking the train. The broken rod kept chopping up through the very spot where the whistle-cord hung, so that "brakes down" could not be called. The momentum of the train gradually increased, and the danger of ditching the whole train was paramount in the engineer's mind. As he recovered himself a happy thought struck him. The train was supplied with automatic air-brakes. If he could but cut the pipe and allow the wind to escape, the brakes would set themselves. He put his ideas into action by putting his penknife between his teeth and climbing down the rear end of the tender, and, getting between that and the first coach, he reached down while the train thundered along at 50 miles an hour, and at the risk of his life succeeded in cutting a slit in the brake-hose. The brakes, faithful to their duty, set themselves, and brought the train to a halt without any further damage. Of course the passengers, when they heard of their narrow escape, were loud in their praises of Bond's bravery.—Chicago Tribune, Dec. 30.

A Scalper's Device.

A dispatch from St. Louis to the Chicago Tribune says: "It is said that the scalpers, who have since the rates war between the Wabash and Alton roads, been almost entirely cut off from many of their customary sources of revenue, intend making an attempt to break down the war and establish peace in the railroad family by the agency of legislation. It is said that they have already framed a bill to this effect, whose passage through the Illinois Legislature they will attempt to secure at its coming and near session. One who has seen this bill says that it provides in substance that any railroad running through the state of Illinois shall not fix permanent passenger rates from one point to another without including intermediate points along its route. Excursion rates may be fixed from point to point for an indefinite time, but after such rates have existed a week all intermediate points are to be allowed the same reduction pro rata. The bill has a long and patriotic preamble calculated to appeal to the sympathies of the people of Illinois outside of Chicago. It points out the injustice of the present system of rate-cutting as an outrage the people should refuse to tolerate, and declares that companies which receive their charters from a state are bound to treat the people of that state with equal courtesy; that they have no right to discriminate against people because they are not fortunate enough to live in a large city.

"It is expected that the question will be stirred up by the country press, and that the people will be aroused to such an extent that they will bring a pressure to bear upon the legislature that will insure the passage of the bill. As soon as the roads are prohibited from discriminating between points they choose to select, and are compelled to include intermediate points, the scalpers are certain the war will cease, and the rates advance to such a degree that they will realize a neat sum on their investment in unlimited tickets."

OLD AND NEW ROADS.

Atchison, Topeka & Santa Fe.—The following circular is dated Jan. 3:

"In a few weeks we shall probably have reached Florida Pass and made a connection with the Southern Pacific. This will increase our business by giving us part of the through travel and freight to and from California, and we anticipate a demand from the mining region of Arizona for coal and coke, for mining materials, food and forage. We think, therefore, that that portion of our road extending from Albuquerque down to the southern part of New Mexico, which has not been able to earn anything, because the crops of Kansas are looking better than they have done for two years, and we hope to see our transportation increased in this state. But the road is not in a suitable condition to do the large business which has already come upon it. Our earnings for the past year, amounting to about \$8,500,000, have been seriously interfered with by the condition of our track and the want of suitable rolling stock. And our best customers and friends on the line in Kansas and New Mexico have not received the accommodation which we would have gladly given them if we had been able to do so. The road has not been sufficiently ballasted, and a large part of it was laid with light iron, which is giving way rapidly both in Kansas and Colorado. In the latter state we are in perpetual danger from cattle straying on our track, and a great deal of expensive fencing will have to be done before we can run at full speed. We require at the present time 25,000 tons of steel and 500,000 cross ties to lay down as rapidly as possible. The machine shops at Topeka are altogether insufficient in size, and we are without the necessary shops to repair rolling stock both in Colorado and in New Mexico. In or near Kansas City we shall require at least 100 acres of land to make exchanges of cars, with the necessary round-houses, coal chutes, &c. The renewal of bridges, which should be done at once, will require some \$80,000, and the water service not less than \$110,000. At Topeka we ought to erect the necessary buildings for the business of the company. Passenger depots should be put up at Lawrence and Emporia, and round-houses should be either enlarged or built at Atchison, Emporia, Florence, Newton, Nickerson, Dodge City, Sargent and several places in Colorado and New Mexico. In the matter of rolling-stock alone, we require engines and cars which will cost in the neighborhood of \$2,000,000. Besides all this, some forty miles of side tracks should be laid at once. In short, although the road has been a successful one and the business has increased as much as the stockholders could hope, vast sums of money will have to be spent before we can work economically and profitably. The directors, after giving the whole matter a careful consideration, have decided that \$6,000,000 should be spent on the road. And they consider it much more conservative to issue stock and sell it at par to the stockholders, than to load down the road with a heavy

debt in the shape of bonds. They therefore have decided to issue one share in four of new stock, which will be used as explained above, for construction and rolling stock.

"The company offers to stockholders of record at the close of business, Feb. 1, 1881, at par, a number of shares equal to one-fourth the amount standing to their credit on the books of the company. These shares will be entered to the credit of each stockholder on the day of subscription and will be in every respect equal to the old shares, except that cash dividends to be declared by the directors out of the earnings of the road shall only be paid on the shares that have been issued. The subscription will be payable in four equal installments—March 1, June 1, Sept. 1, Dec. 1—when shares will be issued for every \$100 of installments paid under each assessment, but no share will be issued on any prepayment of assessments not due. Prepayments of the different assessments will be received, interest being allowed by the company at the rate of 5 per cent. up to the date when the assessment becomes payable. Receipts will be given on account of partial payments. Fractional or other rights can be assigned in a form which may be obtained at the office. Any shares not taken on the 1st of February will be subject to the disposition of the board."

Baltimore & Ohio.—In the suit of the Pullman Palace-Car Company against this company, the United States Circuit Court has declined to grant the preliminary injunction asked for, to restrain this company from running its own sleeping cars. The Court holds that no sufficient grounds have been shown for granting an injunction pending the suit; that public inconvenience would result from an injunction, and that, should the case be decided in favor of the Pullman Company, there is ample security for any damages which may be awarded.

Complaint continues to be made of the delays of this company's New York passenger trains while passing over the Junction road in Philadelphia. The master appointed by the United States Circuit Court to investigate the matter has made his report, but it has not yet come before the Court for action.

Bell's Gap.—Arrangements are being made to change this road from 3 feet to standard gauge, and also to build an extension of six miles from Conport, Pa., the terminus lately reached, to Glen Hope on Clearfield Creek, to reach more coal territory.

Bristol & North Carolina.—This company has been organized to build a narrow-gauge railroad from Bristol, Tenn., south to Elizabethton in Carter County, about 20 miles. It will be nearly parallel to the East Tennessee, Virginia & Georgia, and is chiefly designed to reach some iron mines.

Burlington & Missouri River in Nebraska.—On the Eastern Division of the Republican Valley line trains now run to Hubbell, Neb., seven miles eastward from the late terminus at Chester and 52 miles from the junction with the Western Division at Amboy.

Central Branch, Union Pacific.—It is reported that the Chicago, Rock Island & Pacific Company has bought this line and will at once extend it to Denver. The report is telegraphed from Denver and has not received confirmation thus far. The road has been for some time operated in connection with the Missouri Pacific and it has been understood that all, or nearly all, the stock was held in the Gould interest. It was formerly owned chiefly in Boston, ex-Senator Pomeroy, of Kansas holding a large interest. The property includes 332 miles of road, the Western terminus of the main line being 268 miles from Atchison.

Central Vermont.—This company has completed a survey for a line from Windsor, Vt., down the west side of the Connecticut to Ascutneyville, then across the river and southeast to Hancock, N. H., 44 miles in all. The line is intended to connect with the Manchester & Keene at Hancock, and will give the company a connection with the Nashua & Lowell road without the use of the Northern or the Concord road. Seven miles of the line out of Windsor can also be used as part of the proposed line from Windsor down the river to Brattleboro.

Chesapeake & Ohio Canal.—The United States Circuit Court, in the Stewart suit, has refused the application for the appointment of a receiver. The Court admits that the preferred bondholders have suffered some hardships, and also that the managers of the canal have been guilty of some minor extravagance, but holds that the bondholders have not shown sufficient cause for a receivership. The Court intimated that on proper application an order would be granted requiring the directors to publish at stated periods full statements of their receipts and disbursements, such statements always to be open to inspection. No application for such an order has yet been made.

Chicago, Burlington & Quincy.—At the special meeting in Chicago, Dec. 28, after a short discussion, it was almost unanimously decided to adopt articles of consolidation of the following roads with the main line:

Kansas City, St. Joseph & Council Bluffs; Nodaway Valley; Chillicothe & Chariton; Red Oak & Atlantic; Moulton & Albia; Keokuk & St. Paul, and Hastings & Ayova.

A resolution was then adopted authorizing the board of directors to increase the capital stock to cover the cost of the new property taken.

An adjournment was then had until Jan. 8, when it will be necessary to act on some details of the consolidation.

Columbus, Chicago & Indiana Central.—The committee representing the consolidated first-mortgage bondholders has issued the following notice:

"Messrs. A. Iselin & Co. have notified us that they can only include in any future negotiations they may enter into for the sale of certificates those which shall have been placed under our control, with power to dispose of them on the same terms as they may accept for themselves, subject to such limit as may be fixed. We have made arrangements with the Gallatin National Bank to receive the certificates which their holders wish to be included in any future negotiations which A. Iselin & Co. may enter into for the sale of the certificates under their control. The agreement under which the certificates may be deposited will be ready on Jan. 1, and all certificates deposited on and after that date, and before the 20th of same month, will be included in any sale A. Iselin & Co. may make."

The circular of Iselin & Co. is as follows:

"As an alternative for the payment in bonds for Union Trust Company certificates for Columbus, Chicago & Indiana Central Railway Company consolidated first mortgage bonds, which we had the option by our agreement of Nov. 17 to sell to Mr. W. L. Scott, we proposed to sell him the certificates under our control at 109, with a partial payment down and the balance, with interest at 5 per cent., from Jan. 1 next until paid, to be secured by the certificates sold and additional collateral coupled with the condition that he should be bound to purchase on the same terms all other certificates which might be offered him within 30 days. This condition was objected to on the ground that it imposed the obligation to purchase an indefinite amount of certificates without

giving the right to call for any. In justice to the clients we represent, we cannot, in any future negotiations we may make, include any certificates which shall not have been placed under the control of the Bondholders' Committee in accordance with the terms of the notice they publish under this date."

Columbus & Western.—This road, formerly the Savannah & Memphis, has been sold to the Central Railroad Company of Georgia for \$700,000, and will be transferred to the new owner at once. It is 60 miles long, from Opelika, Ala., to Goodwater, was sold under foreclosure last year and bought by the bondholders, who organized the present company.

Denver, South Park & Pacific.—It is announced that this road will hereafter be operated as the Denver, South Park & Pacific Division of the Union Pacific, that company having acquired a controlling interest.

East Tennessee, Virginia & Georgia.—It is stated that the contract for extending the Morristown Branch to the North Carolina line at Paint Rock will be let soon, and work begun in the spring. It is proposed to extend the road to Warm Springs, six miles over the line in North Carolina, provided the necessary authority can be obtained from the Legislature of that state.

The board has approved the purchase of stock in the Knoxville & Ohio Company, and also the contract made by that company with the Louisville & Nashville for the completion of a connection at the Kentucky state line, by the extension of the Knoxville & Ohio north, and the Louisville & Nashville's Knoxville Branch south.

Evansville, Rockport & Eastern.—This company has been formed by the consolidation of the Lake Erie, Evansville & Southwestern, the Cincinnati, Rockport & Southwestern and the Evansville Local Trade companies. The last named organization held a controlling interest in the Rockport road and claimed also to hold one in the Southwestern, but a law suit was pending in relation to the latter, which will be settled by the consolidation. The consolidated company owns a line from Rockport, Ind., to Jasper, 38 miles, and one from Evansville to the first-named line at Gentryville, 34 miles, making 72 miles of completed road.

Kansas City, Ft. Scott & Gulf.—The Rich Hill Branch of this road has been extended from Rich Hill, Mo., eastward to Carbon Centre, in Bates County, a distance of five miles. This makes the branch 29 miles long, from Pleasanton, Kan., to Carbon Centre. Grading is in progress on a further extension to Timber Hill, three miles south of Carbon Centre.

The Ft. Scott, Southeastern & Memphis Branch is now opened for business to Golden City, Mo., 42 miles from Ft. Scott, Kan., and 25 miles from the junction with the old line at Arcadia.

Laclede & Ft. Scott.—An effort is being made to revive this old project, and it is said that a contract has been let for the construction of the road from Laclede, Mo., to Ft. Scott, Kan. Part of it was graded some eight years ago.

Lake Erie & Western.—The directors have called a meeting of the stockholders and registered bondholders, at Lafayette, Ind., on March 3 next. A contract of consolidation of this company with the St. Louis & Indiana Railway of Illinois, the Lake Erie & St. Louis and the Frankfort & Kokomo Companies of Indiana, will then be submitted for ratification.

The Lake Erie & St. Louis and the St. Louis & Indiana are the companies organized to build the proposed extension of the road to St. Louis.

Louisville & Nashville.—The Rollins suit to enjoin this company from the issue of new stock as a dividend, has been withdrawn and the injunction consequently dissolved.

The company has, somewhat unexpectedly, settled its differences with the Adams and Southern Express companies. All the pending suits are to be withdrawn, the Adams and Southern companies will again take the express business over this company's lines, as formerly, and will buy at a fair valuation all the wagons, horses and other property which the company has bought or has in use for its own express.

At a meeting of the board in New York, Jan. 5, the following statement was submitted for the six months ending Dec. 31, the first half of the company's fiscal year:

Net earnings.....	\$2,306,331
Receipts from other sources.....	95,342
Total.....	\$2,301,673
Interest charges, six months.....	1,610,000
Surplus.....	\$691,673

On this showing it was resolved to declare a dividend of 3 per cent., which will require \$543,900, leaving a balance of \$147,773 to revenue account.

Mexican.—At the half-yearly meeting of the Mexican Railway Company (Vera Cruz to Mexico) in London, Dec. 14, the Chairman, Mr. R. W. Crawford, began his speech to the stockholders as follows:

"Gentlemen, when I addressed you from this chair on June 29 last I thought I had cause to congratulate you on the accounts which we were then able to lay before you on the state of our affairs and the prospects that were opening up to us for the future, and I think I may congratulate you now equally, if not more so, and may expect you in return to congratulate us on the accounts we lay before you in the report you hold in your hands. I told you then of the success that had attended in a great measure the reconstitution of the capital of our company, and I went on, I remember, with some diffidence to say I thought that if all things went well we might possibly pay the first preference holders in full their half-year's claim of 4 per cent. Our traffic has increased, our charges have diminished, and we are enabled to bring about an account to June 30 showing a profit which has enabled us not only to pay the first preference holder his 4 per cent., and the second preference holder his 3 per cent. for the half-year, but also to give that long-suffering individual, the ordinary shareholder something, it is but little, but very little; namely, 1s. per share, or 10s. per cent. [that is 10 shillings on a £100 shares— $\frac{1}{10}$ of 1 per cent.] per annum, and I hope that is but a prelude to the continuation of payments of that kind. The success of the measure of the reconstitution of our capital was very great. You see the effect of it in the accounts which are before you to-day; and upon that I need not say more now, but will proceed at once to deal with matter concerning the half-year in which we are now engaged.

"As I said, prosperity has continued to attend us, and our receipts have been greatly increased, but there is that in the increase, which I am bound to refer to, which makes it of a temporary character, but I hope will become permanent. No doubt a large amount of the traffic charges we are earning is due to the quantity of materials, rails, and everything else making up a railway, which has now been carried by this company from Vera Cruz to Mexico. We have a large traffic of that kind at present; but that company will not go on building railways forever; but our hope is that when the

direct profit received for the conveyance of these materials ceases there will have arisen a general increase in the traffic of the country, arising out of the use of the materials so carried for the Central Company.

"I have been told that I was too cautious on the last occasion in speaking of the events of the last half-year. When speaking of them now from so favorable a point of view I should like not to be too venturesome; but it is not only in matters affecting our railway itself that we have been very fortunate. A great change has come over the face of affairs in Mexico generally; for anyone who has any acquaintance with the affairs of that country would recollect that on former occasions such an event as a change of one President for another had not been unattended with disturbance and tumult. On the present occasion we have seen nothing of the kind. The election had been peaceable and orderly, holding out an example to many of the constitutions of this country—(hear, hear)—and as to the state of Mexico itself, we see there, partly from one cause and partly from another—and among these causes I think I may include the example our railway sets to the country—a much better state of things generally, and order throughout the country, and a state of society different from what was known many years ago, and affording again a wonderful example to the kingdom over St. George's Channel. Now, all this had a great effect on the welfare of our line, and all that we can hope is that this thing will continue, that it may go on, and that industries may arise and increase in that country, and that we may in one way or another be very largely benefited as carriers to the principal part of the state."

Nashua & Lowell.—In the suit of the Nashua & Lowell Railroad Company vs. the Peterboro Railroad, wherein the former sought to be relieved of the obligation to pay the rental stipulated in the case of the Peterboro road to the Nashua & Lowell, which lease the latter corporation maintained was not properly authorized to be executed in its behalf, a stipulation dismissing the bill of complaint has just been filed in the Clerk's office in Boston.

A dispatch from Concord, N. H., says: "At a meeting of the Governor and Council to-day a hearing was given the Boston & Lowell Railroad Corporation, to allow the corporation to state its case in the matter of the legality of the lease of the Nashua & Lowell Railroad, and on a petition to have the lease indorsed in such a manner that its legality will be unassailable. Manager Hosford of the Boston & Lowell road appeared, and presented the contract or lease, and made brief remarks explanatory of the same. Attorney-General Tappan then verbally delivered his opinion. He said that the contract was purely a lease, in his mind, and, as such, it must be authorized by the Legislature, and that the Governor and Council had nothing whatever to do with the sanctioning of it. He further stated that the lease was illegal, for the statute plainly provides that no contract between two or more railroad companies shall be made for a term of years exceeding five, whereas this lease was made for 99 years; and, furthermore, no contract shall be legal or binding unless authorized in writing by the Railroad Commissioners and sanctioned by the Governor and Council; therefore it would be an unwarrantable action for the Governor and Council to ratify a contract for 99 years, and illegal for them to do so by installments, that is, at the end of every five years.

"Mr. Hosford stated that the above was substantially the opinion entertained by the counsel for the Boston & Lowell road; that it would be satisfactory to his people, and he was quite content. He stated that he appeared in the interest of the road, not to argue the matter nor to inaugurate argument, but simply to obtain the opinion of the Governor and Council and Attorney-General, and to ascertain if the corporation was acting legally or not."

Nevada & Oregon.—A contract has been let for the construction of this road, and ground was formally broken at Reno, Nev., last week. It is to run from Reno north and west to the Oregon line at Goose Lake.

New Orleans Pacific.—This company has bought two squares of land in New Orleans for \$150,000 as a site for its depot buildings and shops.

New Sharon, Coal Valley & Eastern.—This projected road is to start from New Sharon in Mahaska County, Ia., and to run southeast by Delta, Fairfield and Salem to Keokuk, a distance of about 95 miles. An extension from New Sharon northwest is also projected.

New York & New England.—On the extension of this road the tracklayers have reached the New York state line, six miles west of Danbury, Conn., the last point reported, and 33 miles west of the old terminus at Waterbury. Further progress has been hindered by the severe weather and deep snow.

Northern Pacific.—The following circular was issued Jan. 4, by the syndicate, which is placing the new loan of this company: "We beg to announce that the subscriptions received by us for the Northern Pacific Railroad general first-mortgage bonds having considerably exceeded the amount reserved for this market, we can receive no further subscriptions, except subject to the London allotment, which will be as soon as practicable after the closing of the books there on Wednesday night, Jan. 5."

Ohio Central.—There is a report that this company has bought or leased the Columbus, Springfield & Cincinnati road, which extends from Columbus, O., west to Springfield, and has been for a long time operated by the Cincinnati, Sandusky & Cleveland Company.

Old Colony.—This company will sell by auction, Jan. 12, 2,000 shares of its stock. It is understood that the proceeds are to be used in payment for new depot accommodations recently purchased in South Boston.

Pennsylvania.—The Philadelphia North American says: "The plan of running a railroad from Philadelphia to Conshohocken and Norristown is still under consideration by the Pennsylvania Railroad Company, the authorities of the former place having offered the right of way through the borough. It is undecided as yet whether the road shall be built to run through Germantown and Chestnut Hill, or by the way of Barren Hill and Spring Mill to Conshohocken, or whether it will be built upon the west side of the Schuylkill River. Surveys are being made on the west side of the Schuylkill for the purpose of ascertaining the practicability of a route which would pass through Lower Merion and debouch upon the Schuylkill somewhere in the neighborhood of Spring Mill. These surveys are purely experimental, and no decision will be reached, most likely, until the comparative expense and the prospective business of the routes on each side of the river can be estimated."

A Philadelphia dispatch of Jan. 3 says: "The Western Union Telegraph Company has additional trouble upon its hands, and the validity of its claim to important privileges will be legally tested in the immediate future. In this instance its opponent is the Pennsylvania Railroad Company, and the point at issue is the right of way along the railway line between this city and New York."

"There is a wide difference of opinion between the officers of the companies as to the terms of the contract under which

the telegraph company is allowed to occupy the line of the railroad for its poles and wires without charge. The only consideration in the past has been the transmission, free of cost, of such messages as the railroad company desired, but, as the latter has its own telegraphic service, it has contended that it does not receive proper remuneration for the privileges allowed.

"Last spring the American Union Company entered into a contract with the Pennsylvania Railroad Company to build a telegraphic line to New York, along the route of the railroad, and pay an annual rental of \$100,000. After this favorable arrangement had been made, the railroad officials gave notice to the Western Union officers that no contract would be made with them in the future unless they complied with certain terms which were similar to those already made with the American Union, and subsequently the telegraph company was informed that all present arrangements would terminate on Jan. 6, unless a new contract was agreed upon prior to that time.

"The last order of the railroad authorities directed the removal of all Western Union Telegraph agents and operators from the line between this city and New York. Now the matter is to have a legal adjudication, and it was the intention of counsel for the Telegraph Company to apply to the United States District Court this morning for an injunction restraining the railroad company from carrying out its designs. The absence of Judge Butler, however, retarded the proceedings, and the application will be made to the court to-morrow."

A later dispatch, Jan. 4, says:

"The Western Union Telegraph Company filed a bill this morning in the United States Circuit Court for an injunction to restrain the Pennsylvania Railroad Company from interfering with its lines of telegraph, between the City of New York and along the lines of railroads of the United Companies in the state of New Jersey. The bill is very elaborate and recites the several agreements under which the lines have been erected, and avers that these agreements are still in full force and that the company has an indisputable right to maintain its lines. The first agreement is dated October 17, 1846, between the Camden & Amboy Railroad Company and the Philadelphia & Trenton Railroad Company and the Magnetic Telegraph Company, to the rights of which latter corporation the Western Union has succeeded. Other contracts provide for the erection of lines between Camden and Amboy, and Jersey City and New Brunswick, and along the Belvidere Delaware and other railroads.

"The bill charges that the Pennsylvania Railroad Company expressly assumed all the contracts, and the New Jersey corporations, and has ever since the lease in 1871 been in enjoyment of telegraphic facilities, without which the railroad could not have been operated, and has assisted the Telegraph Company in maintaining and repairing its lines by the transportation and distribution of men and materials, and that on the faith of these contracts the Telegraph Company has made constant and large expenditures. It further charges that any interference with the line would derange the business of the company, not only by cutting off the chief means of communication between New York and Philadelphia, between which points about a thousand messages a day pass, but also with other points south and west, the messages to and from which, that pass over the main line, are at least ten times as many."

"One of the sections of the bill is as follows:

"And your orator further shows that during the entire time that has elapsed since the erection of the first line of telegraph, under the agreement of Oct. 17, 1846, down to a very recent date, an interval more than sufficient to give an indefeasible title under the statute of limitations, there has been, to the knowledge of your orator, no dispute or misunderstanding between the said railroad companies and your orator, or those to whose rights your orator has succeeded. The use and operation of the several lines of telegraph have in no manner interfered with the use and operation of the railroads themselves, but it would not have been safe nor practicable to manage said railroads without the co-operation of the lines of telegraph. For many years the principal patents were controlled by those under whom your orator now claims, and by the introduction of new and useful improvements in the art, and by the extension of the lines of your orator's company throughout all the states and territories of the Union, greater facilities have from time to time been supplied to the said railroads, and in the repair of the lines already constructed, and the erection of others, the said railroad companies have assisted and co-operated by the transportation of men and materials, and for such extensions and renewals the expenditures of your orator have been constant and great."

"It then refers to negotiations for the purchase of one of its lines of poles by the railroad company, and states that pending the negotiations permission was given to the American Union Company to put up its poles and wires, after which a notice was served, under date of Sept. 30, 1880, requiring the lines to be removed by the 6th of this month. Several letters were exchanged and interviews had, but, no agreement having been reached, it became necessary to make this application.

"The preliminary injunction was granted, and argument will possibly be had upon the return of Judge McKenna to this city on Jan. 17. Messrs. Bullitt and Dickson, of this city, with ex-Chancellor Williamson, of New Jersey, represent the Telegraph Company, and Hon. Wayne McVeagh appeared for the Pennsylvania Railroad Company."

Peoria, Decatur & Evansville.—Track on this road is now laid to West Salem, Ill., six miles beyond the old terminus at Parkersburg, and 198 miles from Peoria. Tracklaying is in progress on the line from West Salem to the Wabash River, 17 miles. On the southern end of the line work has been in progress for some time, and the track is reported laid from Evansville, Ind., northwest to Perryville, 18 miles, with the grading done to the Wabash, 16 miles further.

Philadelphia & Reading.—The Masters, to whom the question of a postponement of the annual meeting to Feb. 15 was referred by the Court, have been hearing testimony and arguments on both sides, closing Jan. 3.

Efforts have been made to unite and draw out the opposition to the present management, and it is understood that Messrs. Kidder, Peabody & Co., who hold the proxies for the McCalmont stock, have received proxies or assurances of support from a number of American stockholders.

A London dispatch of Jan. 4 says that Messrs. McCalmont have made public a letter as follows: "We learn by letters from Mr. Gowen, President of the Philadelphia & Reading Railway Company, that he intends to offer for subscription his scheme of deferred bonds without obtaining any previous guaranty and deposit to secure its success. We are the largest shareholders, and think it right to make it known that the plan, as submitted to the American Court, was based on a guarantee of its success to be given by an association or syndicate, and secured by a deposit of \$2,000,000, and it was only with this condition that the Court approved of the plan. The failure of such an attempt would injure the company, and even only a partial success might produce financial entanglement and mischief. We think, moreover, that as the day for the election of the company's

Wooten, Mooresville & Dallas.—This company has been organized to build a railroad from the North Carolina west, by Dallas and Brevard to Mooresville, about 50 miles. The capital stock is fixed at \$510,000.

New York, New Haven & Hartford.

the gain is not the same ratio as the increase in tonnage or number of passengers. Our expenses also show an increase over last year, resulting from the increase of work done and the advanced cost of labor and supplies.

Philadelphia, Wilmington & Baltimore.

Balance of revenue, Oct. 1, 1879.....	\$738,690.18	
Depreciation and bad debts.....	141,342.80	597,347.38
Balance of revenue, Oct. 1, 1885....		\$756,244.46
The accounts charged off include \$1,894.23 deficiency due		

The operations of the Shore Line Division, 50 miles, were as follows :

this year than last and have got some more pay for it, while the gain is not the same ratio as the increase in tonnage or number of passengers. Our expenses also show an increase over last year, resulting from the increase of work done and the advanced cost of labor and supplies.

Depreciation and bad debts.....	141,342.80	597,347.36
Balance of revenue, Oct. 1, 1889....		\$756,244.49
The accounts charged off include \$1,894.23 deficiency on		

the Delaware lease for the year, the net earnings being less than the rental paid by that amount.

The Company has charged off \$100,000 due from the Dorchester & Delaware for back rent and advances, on account of the inability of that company to pay; also \$15,000 on the Wilmington steamboat account. The new ferry-boat *Canton* having been placed on the line between Canton and Locust Point, Baltimore, the tug and barges formerly in use were sold and loss charged above.

Two new locomotives were bought and several built to replace old ones. Several passenger and freight cars were also built to replace old ones and 68 new freight cars added. The transfer-boat *Canton* was completed and placed in service.

Unusual renewals of ties and rails were made and 6½ miles of track new ballasted with stone. The work of renewing the Susquehanna Bridge in iron was completed. Extensive yards were completed for freight switching and transfers just outside Wilmington and at Bayview, near Baltimore. The road is generally in a better condition than ever before.

The statement of renewal fund is as follows:

Balance, Nov. 1, 1879.....	\$147,376.64
Bridge renewals, stone ballast, signals, and other improvements.....	97,713.05
Balance.....	\$49,663.57
Added from net earnings of 1880.....	150,000.00
Balance, Nov. 1, 1880.....	\$199,663.57

The fruit traffic, upon which the Delaware Division so largely depended, showed a considerable reduction from the previous year. For four years it has been as follows:

	1879-80.	1878-79.	1877-78.	1876-77.
Car-loads berries.....	509	636	771	638
Car-loads peaches.....	3,417	4,331	869	4,003
Weight in tons.....	31,406	39,738	13,111	37,109
Total revenue.....	\$159,875.59	\$238,453.32	\$85,920.23	\$201,644.12
P. W. & B. proportion.....	99,110.54	123,541.08	40,948.01	107,214.99
Del. R. R. proportion.....	60,765.05	114,912.24	44,972.22	94,429.13

The peach traffic is very fluctuating. The highest point it has reached was in 1875, when 9,072 car loads were transported. The berry traffic is much steadier.

The mileage of locomotives was as follows:

	Main Line.	Southern Div.	R. R.	Total.
Passenger trains.....	1,016,418	32,941	145,592	1,194,952
Freight trains.....	794,853	45,578	183,318	1,023,749
Service trains.....	63,551	1,179	2,855	67,585
Total.....	1,874,822	79,698	331,766	2,286,286
Total, 1878-79.....	1,640,649	73,229	329,163	2,043,041

The average per engine was 29,312 miles run for the year.

The report says: "Table E also shows a large expenditure for the purchase of the stock of the West Chester & Philadelphia Railroad Company, all of which has been bought, excepting 44 shares of \$50 par."

"This road furnishes a direct connection between Philadelphia and the Philadelphia & Baltimore Central Railroad, thus completing a second road from Philadelphia to the Susquehanna, practically in the ownership of this company, and giving to the latter a second desirable entrance into Philadelphia, which will prove, it is believed, very valuable to this company, as great difficulties must be overcome in bringing any new railroad into the city from the Southwest."

"This company, on assuming the direction of the management of the West Chester & Philadelphia Railroad, found it in bad condition in respect to repair, and much in need of new equipment and permanent improvements to bring it up to the standard of your road. To meet such wants, it will be seen by table E that this company has loaned nearly \$230,000 to the West Chester & Philadelphia Railroad Company."

"It is expected that the latter road, once placed in a good condition, and running 27 miles from Philadelphia, through a remarkably healthy and attractive country, will of itself prove a safe investment."

"To provide a part of the funds for the purchases and expenditures above described, your board deemed it advisable to borrow \$1,000,000. Accordingly, they caused to be issued and sold at a small premium the bonds of this company, bearing 5 per cent. interest, and payable at the end of 30 years, for that amount, and protected by a sinking fund."

"The operations of the road during the year have been well managed by your Superintendent, H. F. Kenney, to whom and his subordinates much credit is due therefor."

"The condition of the road and its equipment was never better than at present, as your directors know from personal observation."

Troy & Boston.

This company works a line from Troy, N. Y., to North Adams, Mass., 47.51 miles, with a branch to Bennington, Vt., 5.38 miles, making 52.89 miles in all. The line owned is from Troy to State Line, 34.74 miles; the main line from State Line to North Adams, 12.77 miles, is leased from the state of Massachusetts, and the Bennington Branch from the Troy & Bennington Company. The figures given are from the report to the State Engineer of New York for the year ending Sept. 30, 1880.

The stock and debt were as follows at the close of the last two years:

	1880.	1879.
Stock paid in.....	\$1,609,110	\$1,609,010
Funded debt.....	2,291,500	2,227,000
Unfunded debt.....	328,931	380,649
Total.....	\$4,229,541	\$4,216,659

The funded debt increased \$64,500, and the unfunded debt decreased \$51,718 during the year.

The earnings for the year were as follows:

	1879-80.	1878-79.	Decrease.	P. c.
Passengers.....	\$159,086.98	\$164,046.04	\$4,959.06	3.0
Freight.....	390,654.49	408,972.96	18,318.47	4.5
Other.....	20,419.64	20,877.37	457.73	2.2
Total.....	\$570,161.11	\$593,896.37	\$23,735.26	4.0
Expenses.....	298,737.54	305,376.60	6,639.06	2.2
Net earnings.....	\$271,423.57	\$288,519.77	\$17,096.20	5.9
Gross earn. per mile.....	10,780.13	11,228.90	448.77	4.0
Net earn. per mile.....	5,131.84	5,455.09	323.25	5.9
Per cent. of exps.....	52.41	51.41		

Payments reported other than for transportation were as follows:

Net earnings.....	\$271,423.57
Interest.....	188,367.92
Other items.....	39,222.11
Total.....	227,590.03

Surplus for the year.....\$43,833.54

The decrease in earnings, in the face of a general increase in business everywhere, was probably due to the loss of

through traffic, from the competition of the new Boston, Hoosac Tunnel & Western road, a closely parallel line.

St. Louis & San Francisco.

The following statement is published by this company for the year 1880, December partly estimated.

The company has at the close of the year 633.55 miles of road, whereof 392 miles are laid with steel rails. The equipment consists of 59 locomotives, 37 passenger-train cars and 2,123 freight cars.

The stock and debt is as follows:

Stock of all classes.....	\$25,000,000
Bonded debt (\$28,175 per mile).....	17,850,000
Valuable assets owned.....	4,365,716
Bonded debt, less assets (\$21,284 per mile).....	13,484,284

In addition to the above assets, the company own \$9,779,550 (at par) of the capital stock of the Atlantic & Pacific Railroad Company, now issued, and one-half interest in all future issue of the stock of that company. Total authorized issue, \$100,000,000.

The earnings for the year were as follows:

	1880.	1879.	Increase.	P. c.
Gross earnings.....	\$2,694,060	\$1,672,438	\$1,021,622	61.1
Expenses.....	1,319,551	835,488	484,063	58.0
Net earnings.....	\$1,374,509	\$836,950	\$537,559	64.2
Per cent. of exps.....	48.98	49.96		

The expenses for 1880 included \$356,455 expended for steel rails. The comparison between the two years cannot be a close one, owing to changes in mileage. The disposition of net earnings is as follows:

Net earnings.....	\$1,374,509
Interest charges for the year.....	\$865,747
Improvements and new equipment.....	192,758
Surplus for the year.....	\$316,004

Out of this surplus it has just been decided to pay a dividend of 3½ per cent. on the \$4,500,000 first-preferred stock. This will require \$157,500, leaving a balance of \$158,504 to surplus account.

Fitchburg.

This company worked the following lines during the year ending Sept. 30, 1880:

	Miles.
Main Line, Boston to Fitchburg, double track.....	50.68
Watertown Branch, Junction to Waltham.....	6.10
Lawrence & Sterling Branch, South Acton to Marlboro.....	12.42
Peterboro & Shirley Branch, Ayer Junction, Mass., to Mason Village, N. H.....	23.62
Total owned.....	93.32

	Miles.
Vermont & Massachusetts, leased:	
Main Line, Fitchburg to Greenfield.....	56.00
Branch, Greenfield to Turner's Falls.....	2.80
Total owned and leased.....	152.12

The company also runs trains over the Troy & Greenfield Railroad, 37 miles, paying tolls to the state of Massachusetts for its use; this makes the main line 143.88 miles long, from Boston to North Adams. On the road owned there are 50.68 miles of second track and 53.75 miles of siding; on the road leased 10.39 miles second track and 25.35 miles of siding. The use of 10.5 miles of track, from Fitchburg to South Ashburnham, is leased to the Cheshire Railroad. The total mileage of track on the lines worked is 292.29 miles. Additions during the year were 3.98 miles of sidings on the line owned, and 2.55 miles on the leased line.

The mileage leased was nominally diminished by the sale of the Brattleboro Branch of the Vermont & Massachusetts, 21.31 miles, to the New London Northern; this branch, however, has been for many years leased to that road, and has never been worked by the Fitchburg Company.

The equipment consists of 81 locomotives and 83 tenders; 90 passenger and 25 mail and baggage cars; 1,871 box, 841 platform and 20 caboose cars; 126 gravel and other cars, and 9 snow-plows. This is an increase of 4 engines and 5 tenders; 8 passenger cars; 575 box, 61 flat and 29 gravel cars.

The general account was as follows:

Stock (\$48, 221 per mile).....	\$4,500,000.00
Bonds (\$16,074 per mile).....	1,500,000.00
Notes payable.....	406,509.00
Accounts and balances, accrued interest, etc.....	159,515.30
Vermont & Mass. R.R. Co.....	744,291.09
Profit and loss.....	591,788.36
Total.....	\$7,902,094.65
Road, etc.....	\$6,117,397.91
Real estate.....	305,478.91
Sinking fund.....	170,030.34
Vermont & Mass. improvements.....	814,577.53
Debit balances.....	18,000.61
Materials.....	423,134.01
Cash.....	52,905.34
Total.....	7,902,094.65

The funded debt was increased \$500,000, and bills payable decreased \$403,500 during the year.

The traffic for the year was as follows:

	1879-80.	1878-79.	Inc. or Dec.	P. c.
Train mileage.....	748,134	679,683	I. 68,454	10.1
Passenger.....	811,085	867,373	D. 56,288	6.5
Freight.....	325,552	216,202	I. 109,350	50.6
Service and switching.....	1,894,771	1,763,255	I. 121,516	6.9
Total.....	2,461,603	2,227,005	I. 234,598	10.5
Passengers carried.....	39,752,302	35,094,145	I. 4,658,157	13.3
Passenger mileage.....	1,546,950	1,313,289	I. 233,661	17.8
Tons freight carried.....	109,323,290	92,832,640	I. 16,490,650	17.8
Tonnage mileage.....	53.14	51.63	I. 1.51	2.9
Av. train load.....	134.78	107.02	I. 27.76	25.9

Of the passenger mileage 25.1 per cent., and of the tonnage mileage 88.3 per cent. was of business to and from other roads. The average earnings per train mile, including all mileage, were \$1.30; expenses, including interest and rentals, \$1.10, leaving a surplus of 20 cents. The use of heavier engines is shown in the decreased freight train mileage and the larger train load.

The earnings for the year were as follows:

	1879-80.	1878-79.	Increase.	P. c.
Passengers.....	\$749,169.66	\$663,289.84	\$85,879.82	13.0
Freight.....	1,496,459.11	1,205,953.76	290,505.35	24.1
Mail and express.....	60,490.88	53,961.41	6,529.47	12.1
Rents, etc.....	158,479.32	156,708.51	1,770.81	1.1
Total.....	\$2,464,598.97	\$2,079,973.52	\$384,625.45	18.5
Expenses.....	1,725,535.09	1,458,515.39	267,019.70	18.3
Net earnings.....	\$739,063.88	\$621,458.13	\$117,605.75	18.9
Gross earnings.....	16,201.68	13,673.24	2,528.44	18.5
Net earnings.....	4,868.48	4,085.32	773.11	18.9
Per cent. of ex.....	70.01	70.12		

The earnings show a very large increase, while the expenses increased in very nearly equal proportion, still leaving a substantial gain in net earnings.

The income account was as follows:

Net earnings, as above.....	\$739,063.88
Rent of Vermont & Mass. road.....	\$326,492.00
Rent of Conn. River tracks.....	3,750.00
Interest on bonds.....	90,000.00
Interest, other.....	25,216.69
Total.....	\$1,184,522.57
Surplus for the year.....	\$383,635.19

Expenditures for improvements and new equipment on the road owned were \$552,445.28; for real estate, \$197,074.90. The sum of \$115,080.97 was paid for improvements on the Vermont & Massachusetts road.

The total assets, including surplus of cost of road and equipment over capital stock, are \$2,657,903.56; liabilities, except capital stock, \$2,066,015.30, showing a surplus of assets amounting to \$591,788.26.

The report makes the following statements as to the road: The condition of the road-bed and track has been greatly improved since our last report, and will require large additions in the coming year to meet the demands of the increasing traffic.

Since the execution of a seven years' contract with the commonwealth, we can more securely make outlays for improvements of an extensive and permanent character. The traffic has so increased as to test the capacity of the road to its utmost, and the assurance that we have of its permanency and additional increase demands the greatest haste practicable in developing our terminal facilities for both local and export business, in completing the double track to Greenfield, our western terminus, in increasing our motive and carrying capacity, and in improving and enlarging every facility necessary to do the business with dispatch and economy.

Additional accommodations for our export business will be provided by the Hoosac Tunnel Dock & Elevator Company, which was incorporated April 20, 1879, and authorized to take the property at the terminus of our tracks below Charles River Bridge, or so much of it as they should deem advisable, from Tudor's wharf to the navy yard, "and construct and maintain docks, wharves, elevators, warehouses and other buildings and structures suitable for terminal facilities for the reception, storing, delivering and forwarding of freight." This company is already organized, and it will very soon take possession of a portion of the property, and immediately begin work thereon. In accordance with the authority granted, the directors have taken \$192,000 of the stock.

In November, 1879, we purchased Hittenger's wharf, the first wharf east of Tudor's, for \$113,701.36. This is a part of the property described in the charter of the Dock & Elevator Company, and they will undoubtedly soon avail themselves of their right to take or purchase it.

To provide more room for the constantly increasing freight business consigned to Boston, we have begun the construction of a four-hundred-foot extension of No. 1 freight house; have purchased of the Massachusetts General Hospital about twenty-five acres of land and flats in Somerville, and filled in a portion thereof; have largely extended the tracks in the Miller's River and Somerville freight-yards; have been authorized to build a sea-wall 2,700 feet in length, and fill in certain flats south of the Miller's River freight-yard; and have nearly completed the purchase of certain additional property adjacent to said yard, which, with the pieces before mentioned, will double our terminal facilities.

Additional tracks have been laid at Cambridge, Belmont, Concord, Maynard, Littleton, Ayer, Fitchburg, West Fitchburg, Baldwinville, Athol, Orange, Miller's Falls, Lake Pleasant, East Deerfield and Turner's Falls, making, with the tracks laid in the yards before mentioned, an aggregate length of 10.6 miles. Many other improvements along the line of the road are noted at length in the report.

The company have laid during the year, exclusive of construction, 1,092 tons of steel rails, 956 tons of iron rails and 91,034 sleepers.

During the year one switching and four consolidation freight locomotives have been purchased, one passenger engine built, one old locomotive sold, and eight new passenger cars and 635 new freight cars added to our equipment, making our expenditures for additions to equipment \$497,288.29.

The passengers carried over the Troy & Greenfield Railroad have increased from 83,152 in 1879 to 114,664 in 1880; and the tolls paid the commonwealth for passengers, expresses and mails, have increased from \$37,184.57 in 1879 to \$46,154.69 in 1880.

The freight over the same road has increased from 624,083 tons in 1879 to 751,451 in 1880; and the tolls paid therefor have increased from \$100,440.71 in 1879 to \$131,782.95 in 1880.

The total tolls paid the commonwealth on freight and passenger business have increased from \$137,633.28 in 1879 to \$177,937.64 in 1880, or \$40,304.36.

On May 1, 1880, the Brattleboro Branch, with the real estate appertaining thereto, was sold to the New London Northern Railroad Company for \$630,500, which sum, by the terms of the lease of the Vermont & Massachusetts Railroad, has been applied to the payment for additions and improvements made by this company on that road.

Boston, Hoosac Tunnel & Western.

This company owns a line extending from the Rensselaer & Saratoga road at Mechanicville, N. Y., to the Massachusetts state line, 39.03 miles, about 6½ miles being across the southwest corner of Vermont. An extension from Mechanicville to Schenectady is in progress. The trains run over the Troy & Greenfield track for 6½ miles, from the state line to North Adams, Mass. The road was built to connect the Delaware & Hudson lines, and through them the Erie, with the Hoosac Tunnel. The following figures are from the report to the New York State Engineer for the year ending Sept. 30, 1880, the first full year of the operation of the road.

The equipment owned is 8 locomotives; 6 passenger, 4 combination, 2 baggage and 88 other cars, besides 980 freight cars held under a car trust.

The traffic for the year was as follows:

Passengers (through, 52,427; local, 53,744).....	106,171
Passenger mileage.....	1,064,111
Tons local freight (east, 59,247; west, 5,810).....	65,057
Tons through freight (east, 114,272; west, 17,455).....	131,727
Total tons freight carried.....	196,784
Tonnage mileage.....	7,988,297

The earnings of the road for the year were as follows:

Earnings (\$4.934 per mile).....	\$192,418
Expenses (\$1.14 per cent.).....	156,106
Net earnings (\$3.891 per mile).....	\$36,312

The result is considered good for the opening year, in which many obstacles were presented to the full opening of the road for through traffic.

The stock paid in is \$475,000; debt, \$1,540,000, or \$89,487 per mile. The net earnings for the year were about 2.36 per cent. upon the debt as reported.